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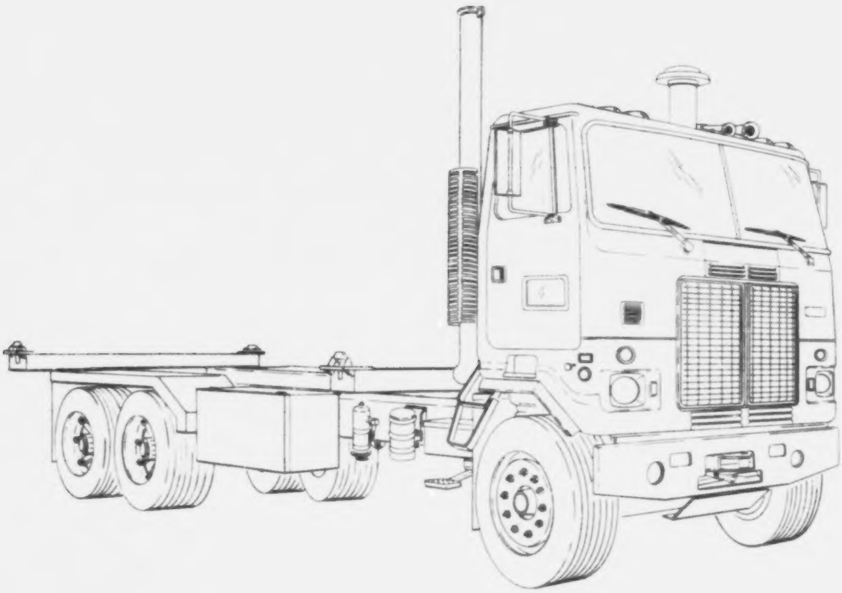
TM 9-2320-281-10



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DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS PAGE 2-1

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) PAGE 2-20

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TROUBLESHOOTING PROCEDURES PAGE 3-3

MAINTENANCE PROCEDURES PAGE 3-18

OPERATOR'S MANUAL

TRUCK CHASSIS FOR DIRECT SUPPORT SECTION TOPOGRAPHIC SUPPORT SYSTEM (TSS)

NSN:2320-01-113-3616

This copy is a reprint which includes current pages from Change 1.

HEADQUARTERS, DEPARTMENT OF THE ARMY

October 1985

D 101.11:

READEX FICHE best copy available

WARNING

EXHAUST FUMES

The following precautions must be observed to ensure the safety of personnel when the engine of any vehicle is operated:

- Do not operate engine in enclosed area unless area is adequately ventilated.
- Do not idle engine for long periods without maintaining adequate ventilation in cab.
- Do not drive vehicle with inspection plates or cover plates removed.
- Be alert at all times during vehicle operation for exhaust odors and exposure symptoms. If either are present, immediately ventilate cab and any personnel compartments. If symptoms persist, remove affected personnel from vehicle and treat as follows: Expose to fresh air, keep warm, and do not permit exercise. If necessary, administer artificial respiration. (See FM 21-11.)
- The best defense against exhaust poisoning is adequate ventilation.

WARNING

COOLING FAN

When working in engine compartment with the engine running, stay clear of the cooling fan. The fan may engage automatically at any time and can cause serious injury.

WARNING

CHANGING TIRE

Wheel and tire assembly have an approximate weight of 200 lbs (90.8 kg). Remove assembly from high side of truck to better control removal.

TM 9-2320-281-10
C1

CHANGE
NO. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C.
25 March 1987

Operator's Manual

TRUCK CHASSIS FOR DIRECT SUPPORT SECTION TOPOGRAPHIC SUPPORT SYSTEM (TSS)

(2320-01-113-3616)

TM 9-2320-281-10, October 1985 is changed as follows:

1. Remove old pages and insert new pages as indicated below.
2. New or changed material is indicated by a vertical bar in the margin of the page.
3. Added or revised illustrations are indicated by a vertical bar adjacent to the illustration identification number.
4. The purpose of Change 1 to this manual is to identify configuration differences between the 1980, 1982, and 1984 models. Model designators can be determined by viewing the data plate on your truck chassis.

Remove Pages	Insert Pages	Remove Pages	Insert Pages
i	i	2-57 and 2-58	(2-57 blank)/2-58
1-0	1-0	2-59 thru 2-64	2-59 thru 2-64
1-1 and 1-2	1-1 and 1-2	3-7 and 3-8	3-7 and 3-8
1-7 thru 1-15	1-7 thru 1-15	3-13 thru 3-16	3-13 thru 3-16
2-1 and 2-2	2-1 and 2-2	3-19 and 3-20	3-19 and 3-20
2-5 thru 2-8	2-5 thru 2-8	3-22 thru 3-26	3-22 thru 3-26
2-15 and 2-16	2-15 and 2-16	B-1 thru B-4	B-1 thru B-4
2-23 thru 2-26	2-23 thru 2-26	C-1	C-1/(C-2 blank)
2-33 thru 2-36	2-33 thru 2-36	D-1 thru D-5	D-1 thru D-5
		INDEX-1 thru INDEX-4	INDEX-1 thru INDEX-4

File this change sheet in front of the publication for reference purposes.

By Order of the Secretary of the Army:

JOHN A. WICKHAM, JR.
General, United States Army
Chief of Staff

Official:

R.L. DILWORTH
Brigadier General, United States Army
The Adjutant General

Distribution:

To be distributed in accordance with DA Form 12-38, operator and organizational maintenance requirements for Truck Chassis, Direct Support Section RC25-64.

WARNING

FIRE AND EXPLOSION

Do not use gasoline for cleaning or as fuel.

Do not get battery electrolyte on your skin, clothing, or in your eyes. It is an acid which can cause injury. Keep all sparks and flames away from batteries. The battery gas is explosive.

When disconnecting battery terminals, always disconnect the ground terminal first.

When reconnecting battery terminals, always connect the ground terminal last.

Methyl alcohol is highly flammable and poisonous, and can be absorbed through the skin. Do not drink or breathe it. If you spill any on your skin, wash it off immediately with water. Keep it away from sparks or flames.

Ether quick-start is explosive and poisonous. Do not permit canisters to be subjected to excessive heat. Do not attempt to start vehicle if ether lines to engine are broken or disconnected.

When filling fuel tank with diesel fuel, be sure hose nozzle on container contacts filler tube on fuel tank to carry off static electricity. Do not smoke, permit open flame or uncovered battery compartments while you are servicing the diesel fuel system.

Dry cleaning solvent P-D-680 is toxic and flammable. Wear protective goggles and gloves and use only in well ventilated area. Avoid contact with skin, eyes, and clothes, and do not breath vapors. Do not use near open flame or excessive heat.

WARNING

EXHAUST PIPE AND MUFFLER

During normal operation, the exhaust pipe and muffler can become very hot. Do not touch these components with your bare hands.

WARNING

BACKING OPERATION

Before backing operation, make sure backup alarm override switch is in normal position. Do not disable alarm at times when personnel or equipment safety may be sacrificed as a result.

WARNING

SEAT BELTS

Use of seat belts while operating your vehicle is mandatory as an aid in preventing personal injury in the event of an accident.

WARNING

AIR PRESSURE

Do not operate truck until low air pressure warning buzzer is silent and air pressure gage indicates pressure of at least 105 psi (7.4 kg/cm^2). Satisfactory braking action depends upon this pressure.

WARNING

ENGINE COOLANT

Take extreme care when removing engine coolant tank fill cap if temperature gage reads above 195°F (90.6°C), to prevent burns or serious injury.

WARNING

JACKING UP TRUCK

Hydraulic jack is intended for lifting the truck, not for supporting the vehicle when performing maintenance. To prevent serious injury, do not get under truck unless it is properly supported with blocks or jack stands.

TECHNICAL MANUAL
No. TM 9-2320-281-10

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC,
16 October 1985

OPERATOR'S MANUAL TRUCK CHASSIS FOR DIRECT SUPPORT SECTION TOPOGRAPHIC SUPPORT SYSTEM (TSS)

NSN: 2320-01-113-3616

REPORTING OF ERRORS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2, located in the back of this manual, direct to: Commander, US Army Tank-Automotive Command ATTN: AMSTA-MBS, Warren, MI 48397-5000. A reply will be furnished to you.

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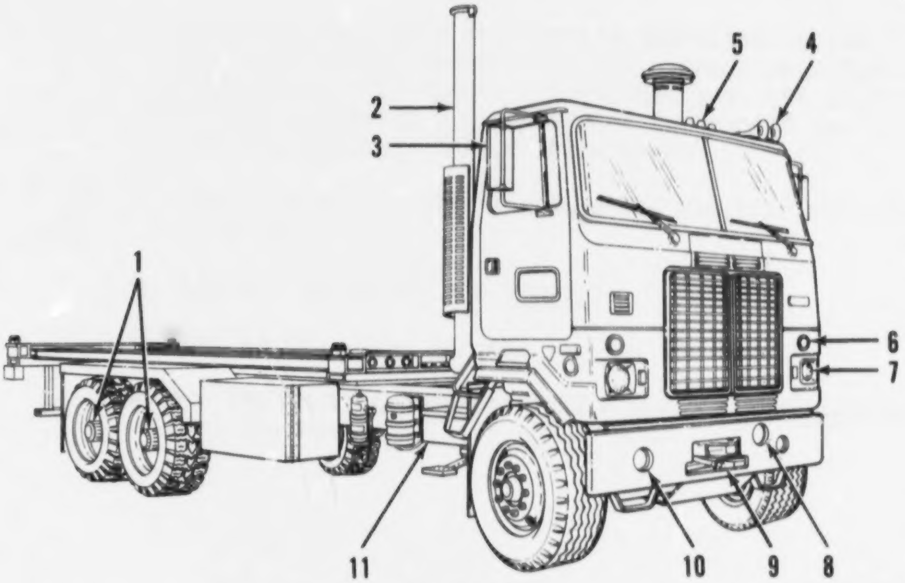
HOW TO USE THIS MANUAL

This manual will help you operate and maintain the Truck Chassis for Direct Support Section, Topographic Support System (TSS). The manual covers what you, the operator, must know and gives you procedures to operate the truck. To use this manual, follow these steps:

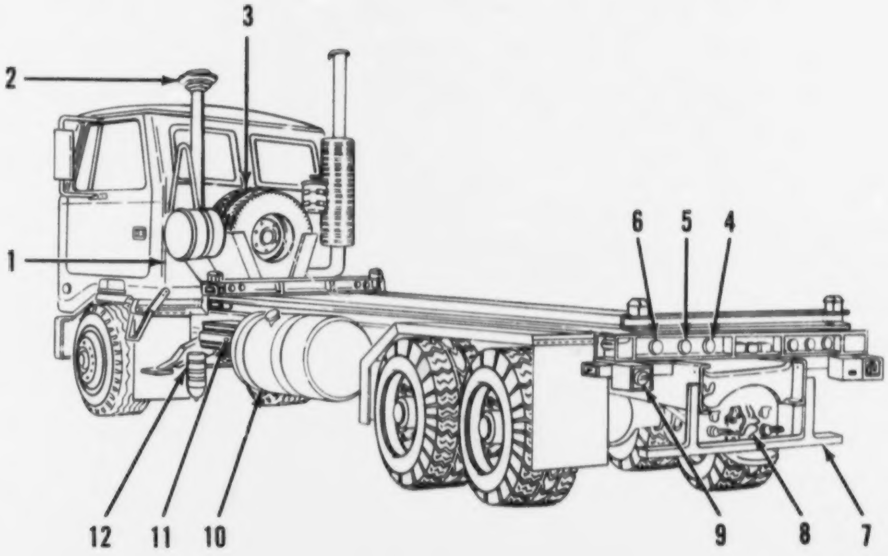
- Read through the manual and become familiar with its contents.
- Read all WARNING and CAUTION.
- Look in the Index for the section you need.
- Use the Section Index to find exact block of information you want.



TA462282

RIGHT FRONT VIEW

1. Driving Axles
2. Exhaust Stack
3. Side Mirror (both sides)
4. Air Horn
5. Clearance Light
6. Turn Signal Light
7. Service Headlight
8. Blackout Light
9. Front Tow Pin
10. Driving Light
11. Battery Box



TA462283

LEFT REAR VIEW

1. NTC 400 BC2 Diesel Engine
2. Air Intake and Filter
3. Spare Wheel and Tire
4. Backup Light
5. Brake Light and Tail Light
6. Turn Signal and Tail Light
7. Bumper
8. Towing Pintle
9. Blackout Light
10. Fuel Tank
11. Battery Box
12. Fuel Filter Assembly

CHAPTER 1

INTRODUCTION

Section I. GENERAL INFORMATION

1-1. SCOPE

This technical manual contains instructions for the operation and operator's maintenance of the Truck Chassis for Direct Support Section, Topographic Support System (TSS). These instructions provide you with information for the safe, efficient operation of this vehicle under usual and unusual conditions, as well as providing a general knowledge of the Truck Chassis systems so you can troubleshoot problems.

The truck will carry a standard size-20 ISO (International Organization for Standardization) container off-road, on primary or secondary roads, and it will also pull a full trailer. The truck is only driven by tandem rear axles and will not cross terrain that requires both front- and rear-powered axles. Fording of hard-bottom water crossings is possible to a depth of 30 in. (0.8 m). There are no accessories to permit deep-water fording.

1-2. MAINTENANCE FORMS AND RECORDS. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA Pam 738-750, The Army Maintenance Management System (TAMMS).

1-3. HAND RECEIPT (-HR) MANUAL. This manual has a companion document with the same TM number followed by "-HR" (which stands for Hand Receipt). TM 9-2320-281-10-HR consists of preprinted hand receipts (DA Form 2062) that list end item-related equipment (i.e., Components of End Item, Basic Issue Items, and Additional Authorization Lists) for which you must account. As an aid to property accountability, additional -HR manuals may be requisitioned from the following source in accordance with procedures in Chapter 3, AR 310-2: The US Army Adjutant General Publication Center, 2800 Eastern Blvd, Baltimore, MD 21220.

1-4. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR). If your truck chassis needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you do not like about your equipment. Let us know why you do not like the design or performance. Put it on an SF 368 (Quality Deficiency Report). Mail it directly to: Commander, US Army Tank-Automotive Command, ATTN: AMSTA-QR, Warren, MI 48397-5000. We will send you a reply.

1-5. NOMENCLATURE CROSS-REFERENCE LIST

Common Name	Official Name
Cold Start System	Ether Quick-Start System
Drive Shaft	Propeller Shaft
Engine Coolant	Antifreeze, Ethylene Glycol Mixture
Glad Hand	Quick-Disconnect Fitting
Jake Brake, Jacobs Brake	Engine Retarder/Brake
Petcock, Draincock	Drain Valve

1-6. ABBREVIATIONS

ac	Alternating Current
amp	Ampere
AR	Army Regulation
°C	Degree Centigrade or Celsius
CID	Cubic Inch Displacement
EIR	Equipment Improvement Recommendation
°F	Degree Fahrenheit
ft lbs	Foot Pounds
GVWR	Gross Vehicle Weight Rating
hp	Horsepower
Hz	Hertz
ISO	International Organization for Standardization
kg	Kilogram
kg/cm2	Kilograms per Square Centimeter
kph	Kilometers per Hour

kPa	Kilo Pascals
lbs	Pounds
m	Meter
mm	Millimeter
mph	Miles per Hour
N·m	Newton Meter
PM	Preventive Maintenance
psi	Pounds per Square Inch
rpm	Revolutions per Minute
V	Volts
vac	Volts Alternating Current
vdc	Volts Direct Current

Section II. EQUIPMENT DESCRIPTION

1-7. EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES

Characteristics

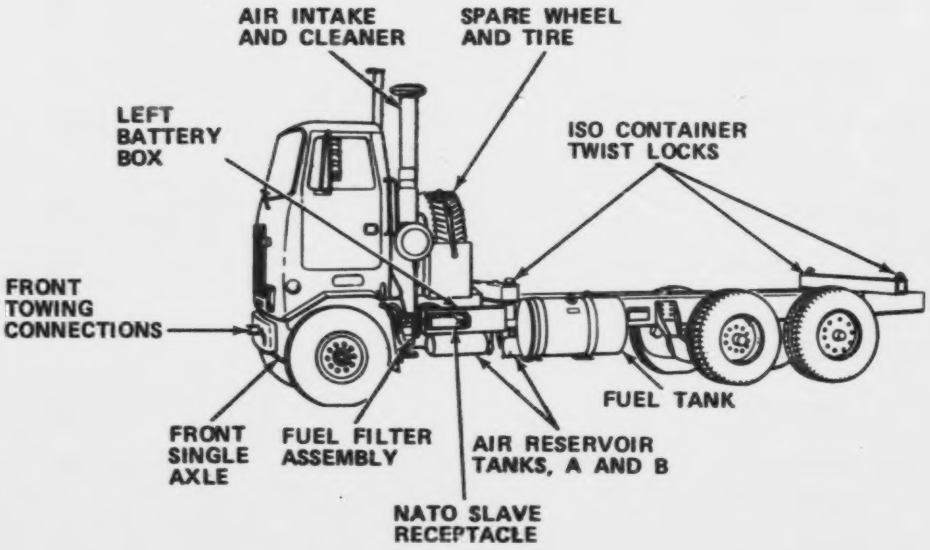
- Commercial Truck Chassis, modified for military requirements.
- Designed to transport standard 20-ft ISO container.

Capabilities and Features

- Diesel powered.
- Pneumatic load suspension.
- Rear axle differential lock for off-road transport.
- Dual-range (high/low) rear drive for high torque at low speed.
- Automatic transmission with five forward speeds.
- Cab-over-engine design to reduce length.
- Installed Arctic Winterization Kit.

1-8. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

a. EXTERNAL COMPONENTS


AIR INTAKE AND CLEANER
SPARE WHEEL AND TIRE
LEFT BATTERY BOX
ISO CONTAINER TWIST LOCKS
FRONT TOWING CONNECTIONS
FUEL TANK
FRONT SINGLE AXLE
FUEL FILTER ASSEMBLY
AIR RESERVOIR TANKS, A AND B
NATO SLAVE RECEPTACLE

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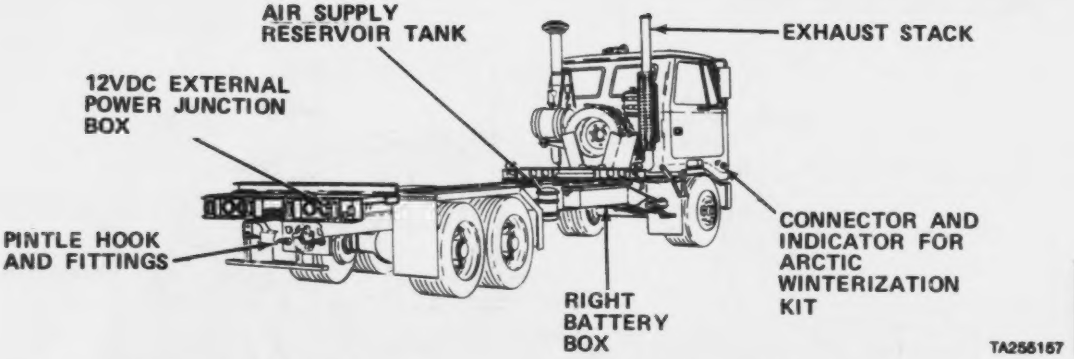

AIR SUPPLY RESERVOIR TANK
EXHAUST STACK
12VDC EXTERNAL POWER JUNCTION BOX
PINTLE HOOK AND FITTINGS
CONNECTOR AND INDICATOR FOR ARCTIC WINTERIZATION KIT
RIGHT BATTERY BOX
TA255157

AIR INTAKE AND CLEANER. Provides intake air for diesel engine. Removes dust, dirt, and moisture from air.

SPARE WHEEL AND TIRE. Spare for front wheel.

ISO CONTAINER TWIST LOCKS. Mounting points for 20-ft ISO container.

FUEL TANK. 100 gal. diesel fuel capacity.

AIR RESERVOIR TANKS A and B. Store compressed air for brake systems.

LEFT BATTERY BOX. Mounting for two, parallel-connected 12 V batteries, and NATO slave connection (connected in parallel with right battery box).

FUEL FILTER ASSEMBLY. Glass bowl shows contamination or water. Fitted with bottom drain. Heats fuel when cab heater is turned on.

FRONT SINGLE AXLE. Dead axle for steering only.

FRONT TOWING CONNECTIONS. Emergency towing and tie down position.

NATO SLAVE RECEPTACLE. Slave connection for starting or being started with 12 Vdc power.

AIR SUPPLY RESERVOIR TANK. Stores compressed air for air systems.

EXHAUST STACK. Exhausts engine gases above cab level.

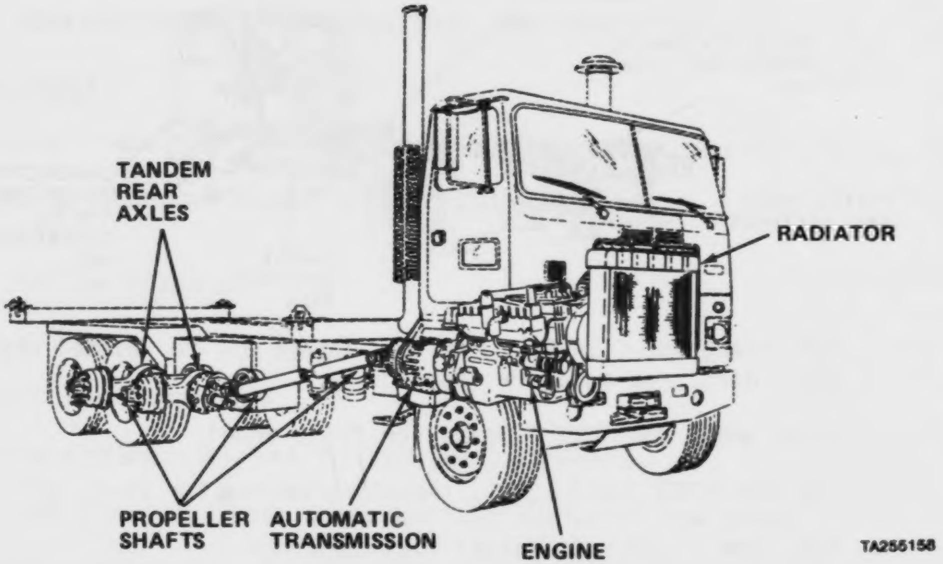
CONNECTOR AND INDICATOR FOR ARCTIC WINTERIZATION KIT. Plug in connector from 110 vac 60 Hz power to heat engine, heat batteries, and power battery charger.

RIGHT BATTERY BOX. Mounting for two parallel-connected 12 V batteries (connected in parallel with left battery box).

12 VDC EXTERNAL POWER JUNCTION BOX. Contains 12 vdc power cord for ISO container.

PINTLE HOOK AND FITTINGS. Tie down position and attachment point for trailer; accepts lunette and air/electric trailer connections.

b. ENGINE AND DRIVE TRAIN



RADIATOR. Dissipates heat from combustion and engine brake.

ENGINE. Turbocharged, six-cylinder, diesel, 400 hp.

AUTOMATIC TRANSMISSION. Five speeds forward; one reverse.

PROPELLER SHAFTS. Connect transmission to rear axles.

TANDEM REAR AXLES. Dual-range axles provide choice of final drive gear ratio (high/low). Fitted with locking interaxle differential for increased traction at low speed.

c. AIR SYSTEM

DRIVER'S AIR SUSPENSION CONTROL. Overrides automatic pressure in air suspension system.

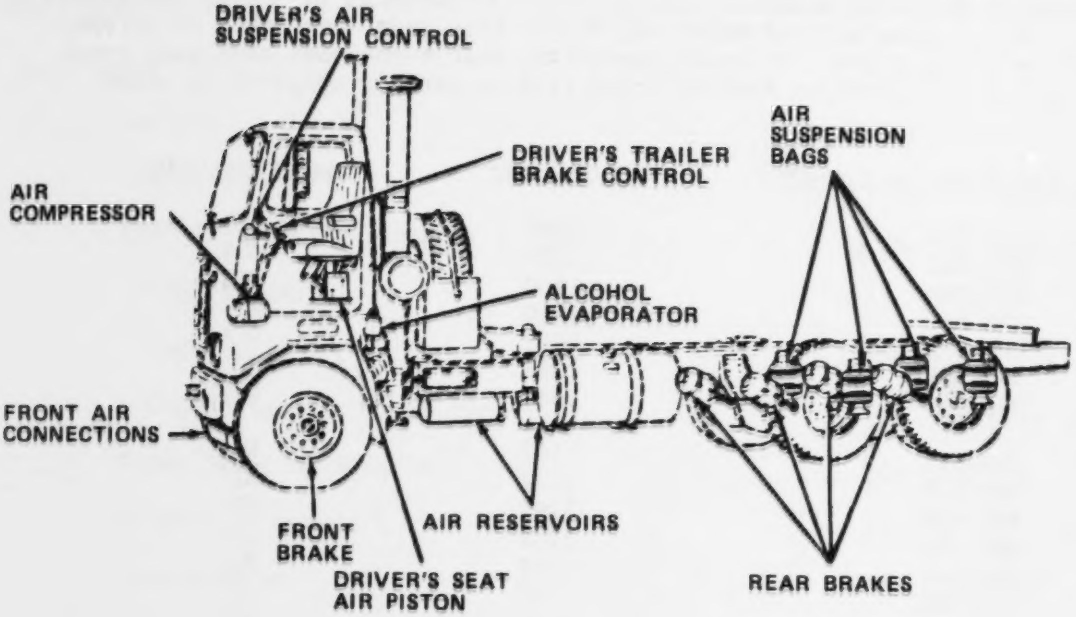
DRIVER'S TRAILER BRAKE CONTROL. Controls air brakes for trailer (when attached).

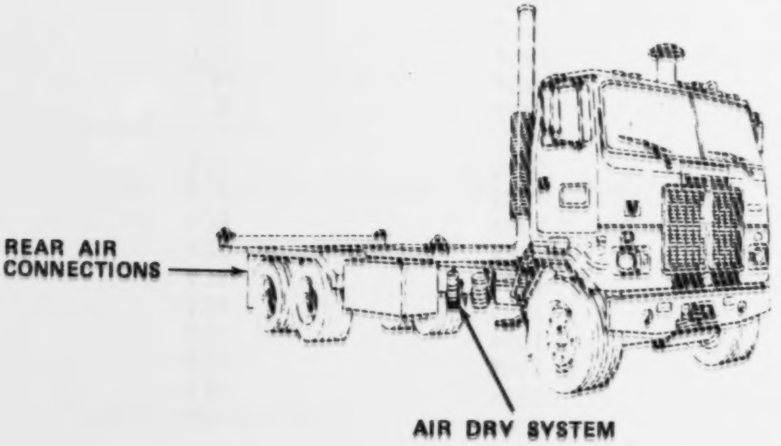
AIR COMPRESSOR. Engine-driven compressor provides compressed air to storage tanks.

ALCOHOL EVAPORATOR. Adds alcohol vapor to air system to prevent freezing in cold weather.

AIR DRY SYSTEM. Removes moisture and filters compressed air to reduce condensation in system.

AIR SUSPENSION BAGS. Air load suspension system. Preset for load height.


DRIVER'S AIR SUSPENSION CONTROL
AIR SUSPENSION BAGS
DRIVER'S TRAILER BRAKE CONTROL
AIR COMPRESSOR
ALCOHOL EVAPORATOR
FRONT AIR CONNECTIONS
AIR RESERVOIRS
FRONT BRAKE
DRIVER'S SEAT AIR PISTON
REAR BRAKES


REAR AIR CONNECTIONS
AIR DRY SYSTEM

TA 256159

REAR BRAKES. Air-controlled rear braking system.

REAR AIR CONNECTIONS. Connections to provide air to trailer (when used).

AIR RESERVOIRS. Store compressed air.

FRONT BRAKE. Air-controlled front braking system.

FRONT AIR CONNECTIONS. Connections to charge air system when truck is towed or provide slaved air as required.

DRIVER'S SEAT AIR PISTON. Regulates height of driver's seat. Dampens road shock.

1-9. DIFFERENCES BETWEEN MODELS. Configuration differences have been identified by model years. Actual manufactured dates may differ from model year date as stamped on your vehicle's data plate. To avoid confusion, Usable-on-Codes have been cross-referenced to U.S. Registration Numbers (stenciled on vehicle chassis) as shown below:

U.S. Registration Number	Model Year	Usable-on-Codes
NPO 8AO	1980	RCS
NPO 89Z	1980	RCS
NPO 89X	1980	RCS
NPO 8AI	1980	RCS
NPO 89W	1980	RCS
NPO 89Y	1980	RCS
NPO 89V	1980	RCS
NPO 62L	1982	RCT
NPO 62M	1982	RCT
NPO 62N	1982	RCT
NPO 62P	1982	RCT
NPO 62Q	1982	RCT
NPO 62R	1982	RCT
NPO 62S	1982	RCT
NPO 62T	1982	RCT
NPO 62U	1982	RCT
NPO 62V	1982	RCT
NPO 62W	1982	RCT
NPO 62X	1982	RCT
NPO 62Y	1982	RCT
NPO 89S	1984	RCV
NPO 89R	1984	RCV
NPO 633	1984	RCV
NPO 89Q	1984	RCV
NPO 632	1984	RCV
NPO 631	1984	RCV
NPO 630	1984	RCV
NPO 62Z	1984	RCV
NPO 89T	1984	RCV
NPO 89U	1984	RCV

1-10. EQUIPMENT DATA

Capacities	
Radiator	48 qts (45.4 l)
Engine Oil	
(Refill capacity includes filters)	43.36 qts (41.0 l)
Engine Sump	2 qts (1.89 l)
Engine Filter	3.72 qts (3.5 l)
Engine Bypass Oil Filter	11.64 qts (11.0 l)
Power Steering Reservoir	8 qts (7.6 l)
Alcohol Evaporator	1 pt (.47 l)
Transmission	64 pts (30.3 l)
Front, Rear Axle	44 pts (20.8 l)
Rear, Rear Axle	41 pts (19.4 l)
Fuel (Diesel)	100 gal. (378.5 l)
Operating Mode	On-and Off-Road
Center of Gravity (Without ISO Container)	138 in. (3.5 m) from front bumper 33 in. (0.8 m) from ground 50 in. (1.3 m) from side
Dimensions (maximum)	
Height (to exhaust stack)	151 in. (3.8 m)
Length	346 in. (8.8 m)
Width (at mirrors)	119 in. (3.0 m)
Width (without mirrors)	98 in. (2.5 m)
Weight	20,950 lbs (9502.9 kg)
Engine	
Displacement	855 CID (14.0 l)

Torque	1150 ft lbs (1559 N•m)
Horsepower	
Gross	400 hp
Net	360 hp at 2100 rpm
Cylinders	6
Firing Order	1, 5, 3, 6, 2, 4
Bore	5.5 in. (139.7 mm)
Stroke	6 in. (152.4 mm)

Performance

Speed in Gear at Governed 2100 rpm

	High			Low		
Gear	Ratio	mph	kph	Ratio	mph	kph
1st	3.692	13.4	21.6	7.2	6.7	10.8
2nd	2.002	24.7	39.7	5.29	9.4	15.1
3rd	1.583	39.3	63.2			
4th	1.253	39.5	63.6			
5th	1.000	49.5	79.6			
Rev.	9.648	5.13	8.3			

Low Range Axle Maximum Speed 10 mph (16.1 kph)

Maximum Grade	30° Grade
Turning Circle	95.6 ft (29.14 m)
Maximum Load	52,000 lbs (23,587 kg)

Major Components

	Manufacturer	Series
Engine	Cummins	NTC 400 BC2
Transmission	Allison	HT754CRD
Front Axle	Rockwell	FL-931
Rear Axle	Eaton	DT440P
Alternator	Delco-Remy	30-S1
Fuel Pump	Cummins	PT (Type G)
Starter	Delco-Remy	Heavy Duty

Operating Temperatures

Engine Coolant	165°F-195°F (73.9°C-90.6°C)
Engine Oil	225°F (107.2°C)

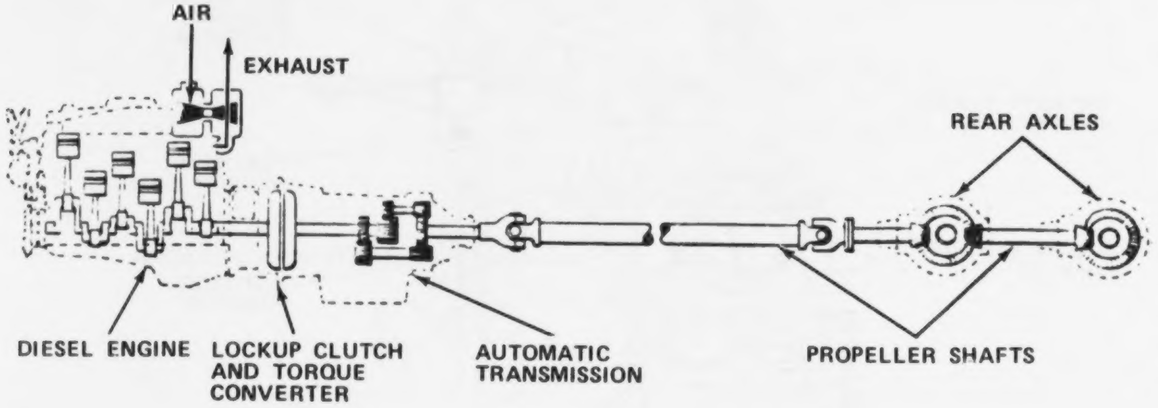
Tires

	Front Axles	Rear Axles
Size	16.5-22.5	18-22.5
Pressure, Cold	55 psi (379 Kpa)	55 psi (379 kPa).

Water Performance	30 in. (0.8 m) fording depth
Weight	
Curb	20,950 lbs (9503 kg)
Payload	30,050 lbs (13,630 kg)
GVWR	51,000 lbs (23,133 kg), max
Electrical	Four 12 V batteries (24 available through inverter)
Arctic Winterization Kit	110 V ac heater for engine block and batteries

Section III. TECHNICAL PRINCIPLES OF OPERATION

1-11. ENGINE AND POWER TRAIN



TA255160

DIESEL ENGINE. Powers truck, air compressor, alternator, power steering pump, oil pump, fan drive, and fuel pump. Combustion gases drive turbocharger to compress incoming filtered air for higher engine power and efficiency. Engine is fitted with driver-controlled retarder that prevents either 2, 4, or 6 cylinders from delivering a power stroke.

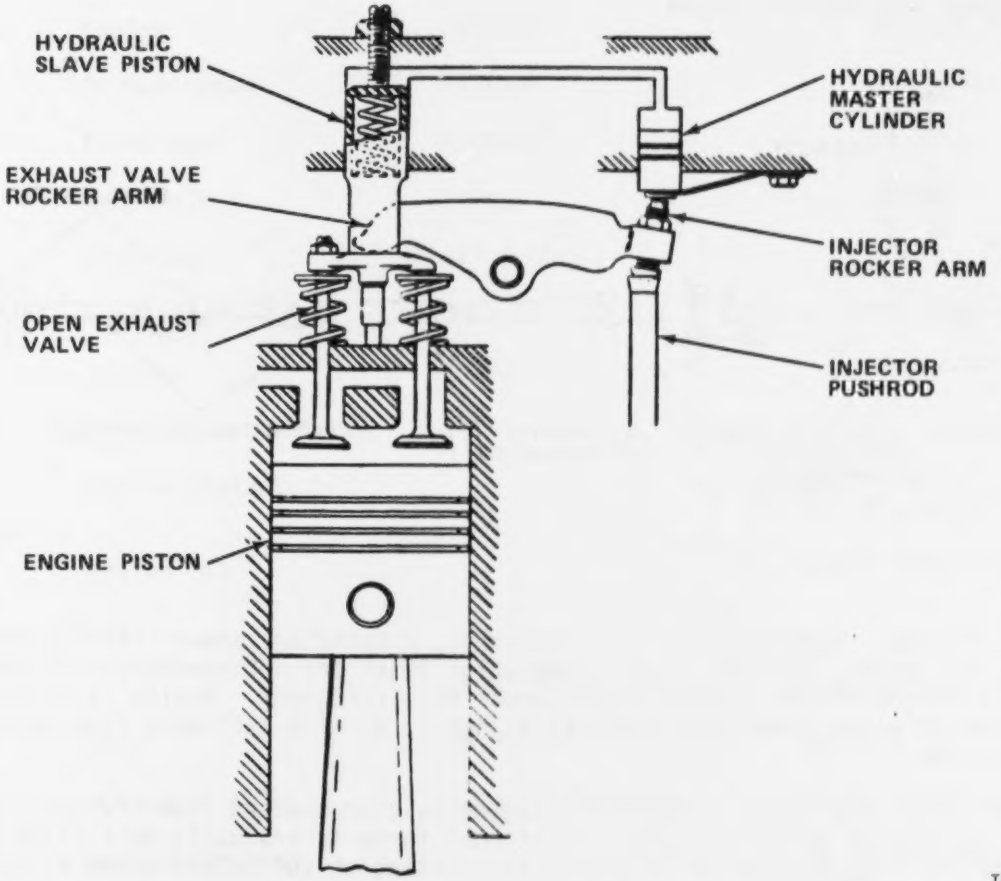
LOCKUP CLUTCH AND TORQUE CONVERTER. Engine is disconnected from transmission at low rpm. As engine speed increases, rotational force is gradually multiplied and transmitted to transmission until engine is rotating at sufficient speed to actuate lockup clutch, directly coupling engine to transmission.

AUTOMATIC TRANSMISSION. Preset governor and mechanical modulator control selection of gear ratio. Shift selector limits gear range.

PROPELLOR SHAFTS. Transmit power from transmission to rear axles.

REAR AXLES. Operator selects high or low final drive ratio. Differential permits left and right wheels to rotate at different speeds when cornering. Lockup feature provides for differential to be locked for improved traction under adverse conditions.

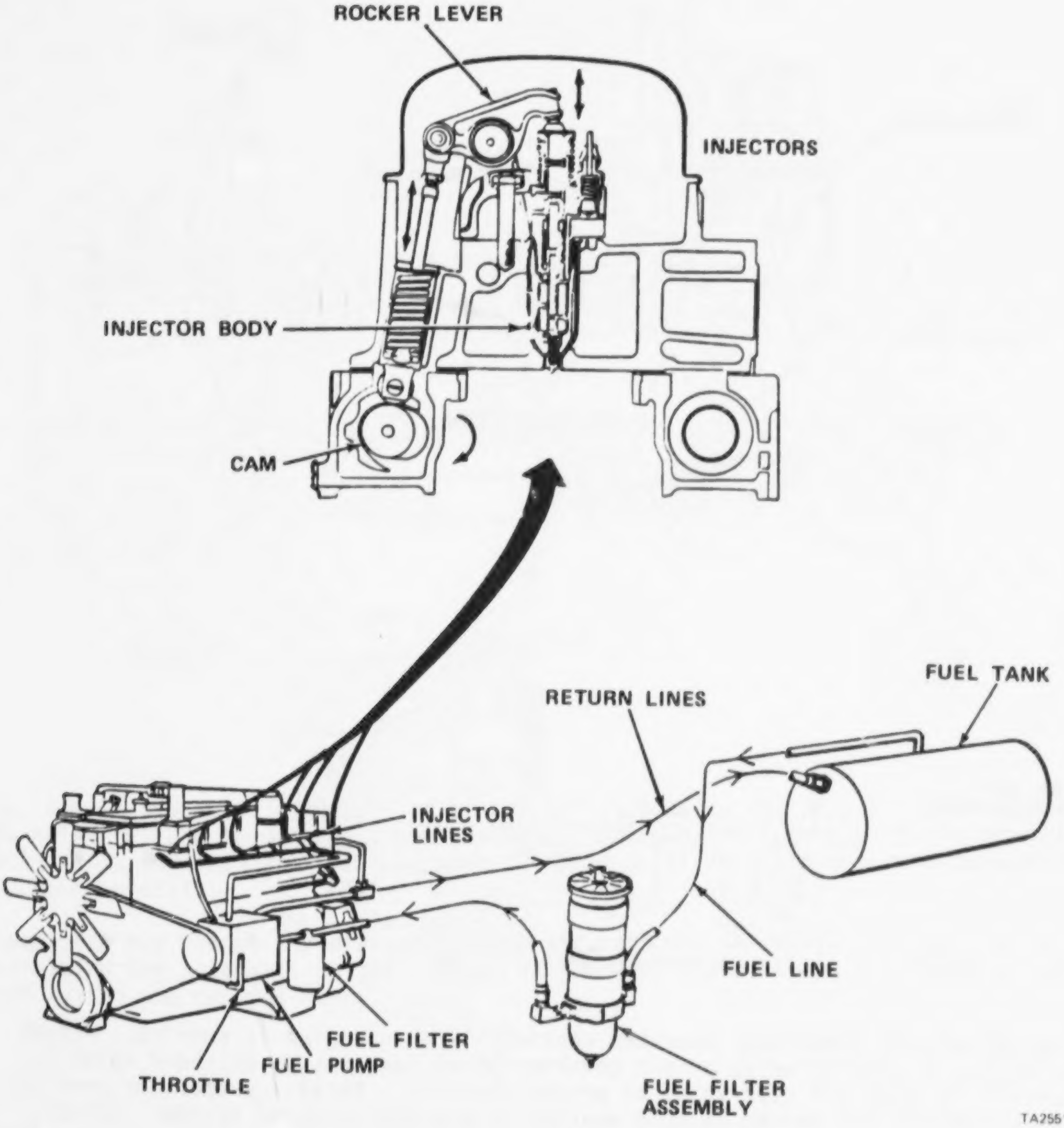
1-12. ENGINE RETARDER/BRAKE


HYDRAULIC SLAVE PISTON
HYDRAULIC MASTER CYLINDER
EXHAUST VALVE ROCKER ARM
INJECTOR ROCKER ARM
OPEN EXHAUST VALVE
INJECTOR PUSHROD
ENGINE PISTON

TA255161

Engine Retarder/Brake is activated on either two, four, or six cylinders. Injector pushrod moves the injector rocker arm against the hydraulic master cylinder. As engine piston approaches top of compression stroke, hydraulic slave piston pushes on exhaust valve rocker arm to open exhaust valve. Cylinder vents to exhaust manifold without firing on power stroke. Engine has used power from wheels and transmission to compress air and slow wheels.

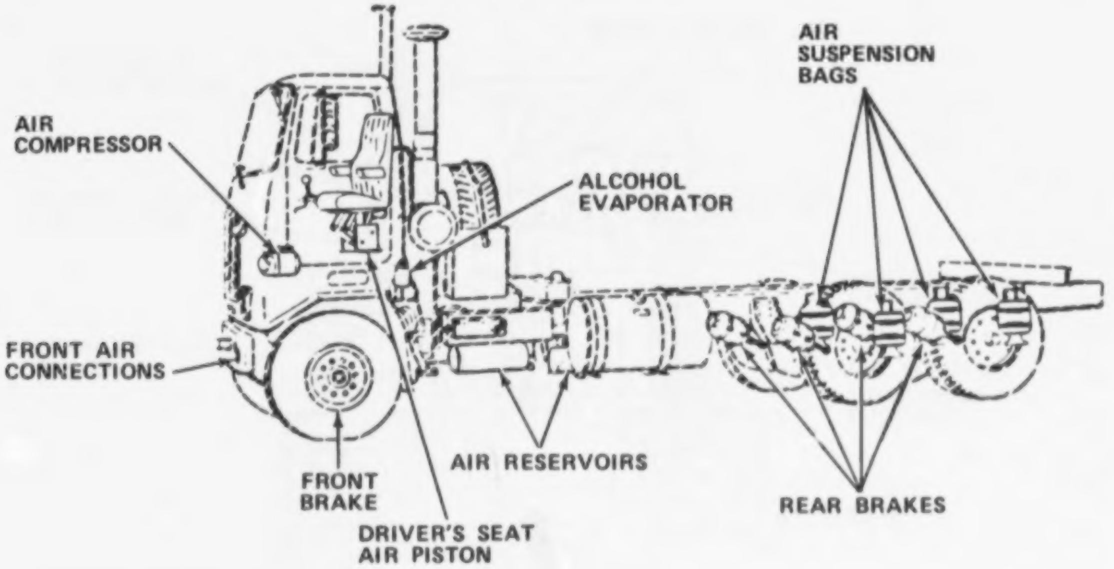
1-13. FUEL SYSTEM

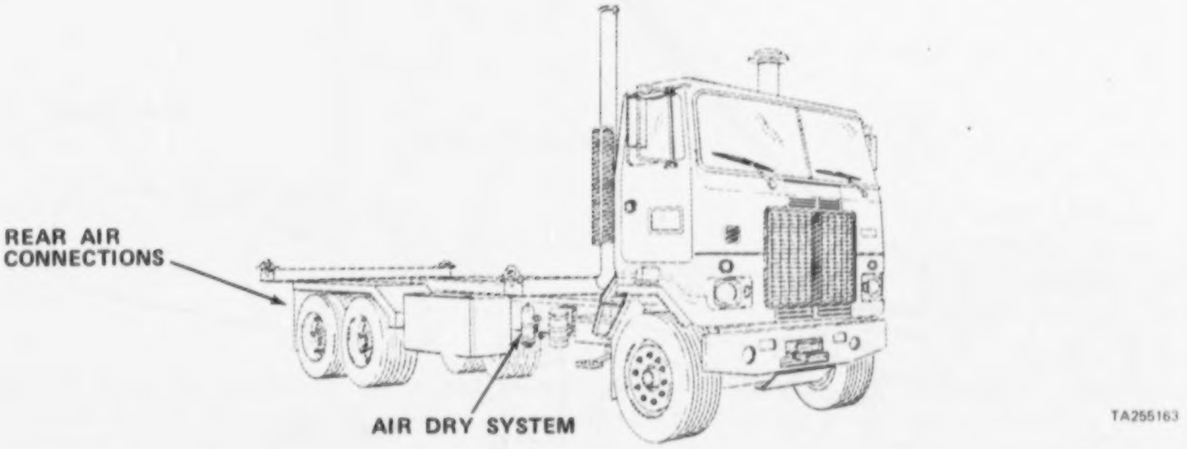

ROCKER LEVER
INJECTORS
INJECTOR BODY
CAM
FUEL TANK
RETURN LINES
INJECTOR LINES
FUEL LINE
FUEL FILTER
FUEL PUMP
THROTTLE
FUEL FILTER ASSEMBLY

TA255162

Diesel fuel is drawn from fuel tank through fuel line through fuel filter assembly and fuel filter by fuel pump. Governor and throttle regulates amount of fuel provided through injector lines to injectors. Injectors meter fuel into injector body and discharge high pressure spray of fuel into cylinder when activated by cam and rocker lever. Fuel not used by injectors is returned to fuel tank through return lines.

1-14. AIR SYSTEM AND BRAKES


AIR SUSPENSION BAGS
AIR COMPRESSOR
ALCOHOL EVAPORATOR
FRONT AIR CONNECTIONS
AIR RESERVOIRS
FRONT BRAKE
DRIVER'S SEAT AIR PISTON
REAR BRAKES

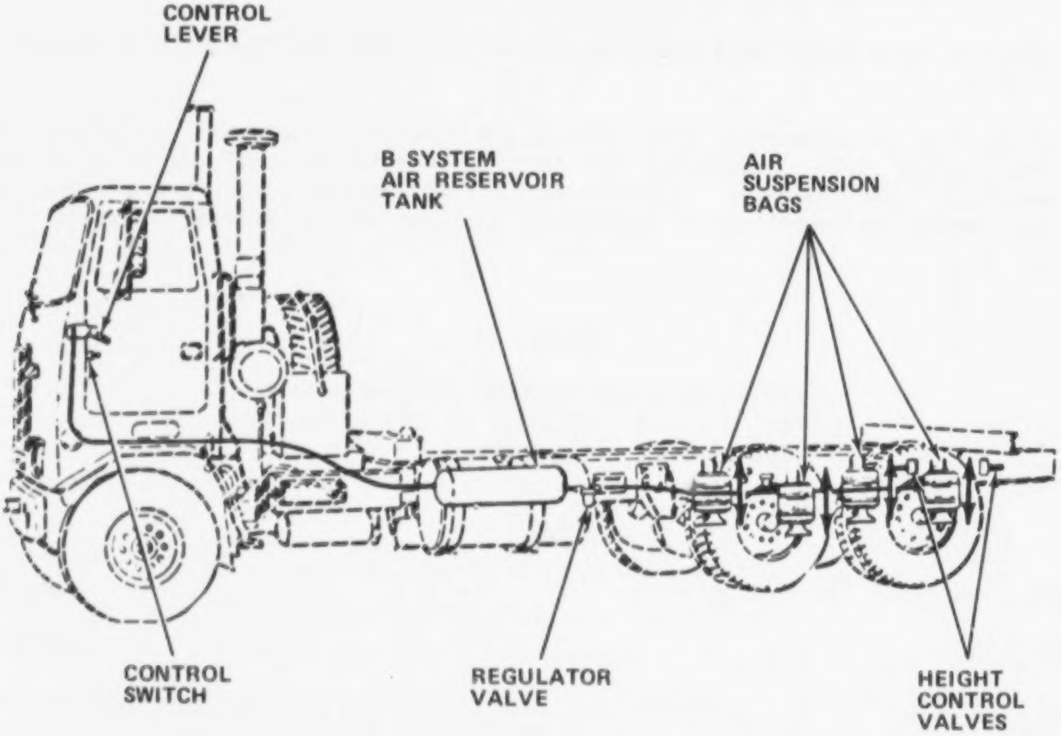

REAR AIR CONNECTIONS
AIR DRY SYSTEM
TA255163

Engine-driven air compressor operates continually when engine is running. Actual compression is controlled by an air governor which operates an unloader valve in compressor to keep air reservoirs at proper pressure. Alcohol evaporator provides alcohol vapor to air system in cold weather to prevent icing of system. Air dry system extracts moisture from compressed air. A-system rear axle and B-system front axle air reservoirs store compressed air for independent operation of split braking systems.

Driver's seat and air suspension use stored, pressurized air. Air connections permit vehicle air system to be pressurized or to provide pressure.

Air connections are color-coded at glad hands. Yellow indicates control (service) fittings at curbside. Red indicates supply (emergency) fittings at roadside.

1-15. AIR SUSPENSION SYSTEM


CONTROL LEVER
B SYSTEM AIR RESERVOIR TANK
AIR SUSPENSION BAGS
CONTROL SWITCH
REGULATOR VALVE
HEIGHT CONTROL VALVES

TA255164

The load is supported by inflation of the air suspension system. Air bags control the height of the load and cushion the load from road shock. This system automatically fills and supports the load when there is sufficient air pressure to operate the truck chassis.

The driver may change the pressure in the air bags and the height of the load by overriding the automatic height control valves with use of the air suspension control switch and control lever.

CHAPTER 2

OPERATING INSTRUCTIONS

Section I. DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS

2-1. GENERAL. Before you attempt to operate your equipment, be sure that you are familiar with the function of all controls and indicators. This manual covers only the controls and indicators in the cab and chassis. Controls and indicators located in an attached section or van body are explained in the Technical Manual for that section.

NOTE

In this manual, left or roadside refers to driver's side of vehicle. Right or curbside refers to passenger's side of vehicle.

INDEX

PROCEDURE	PARAGRAPH
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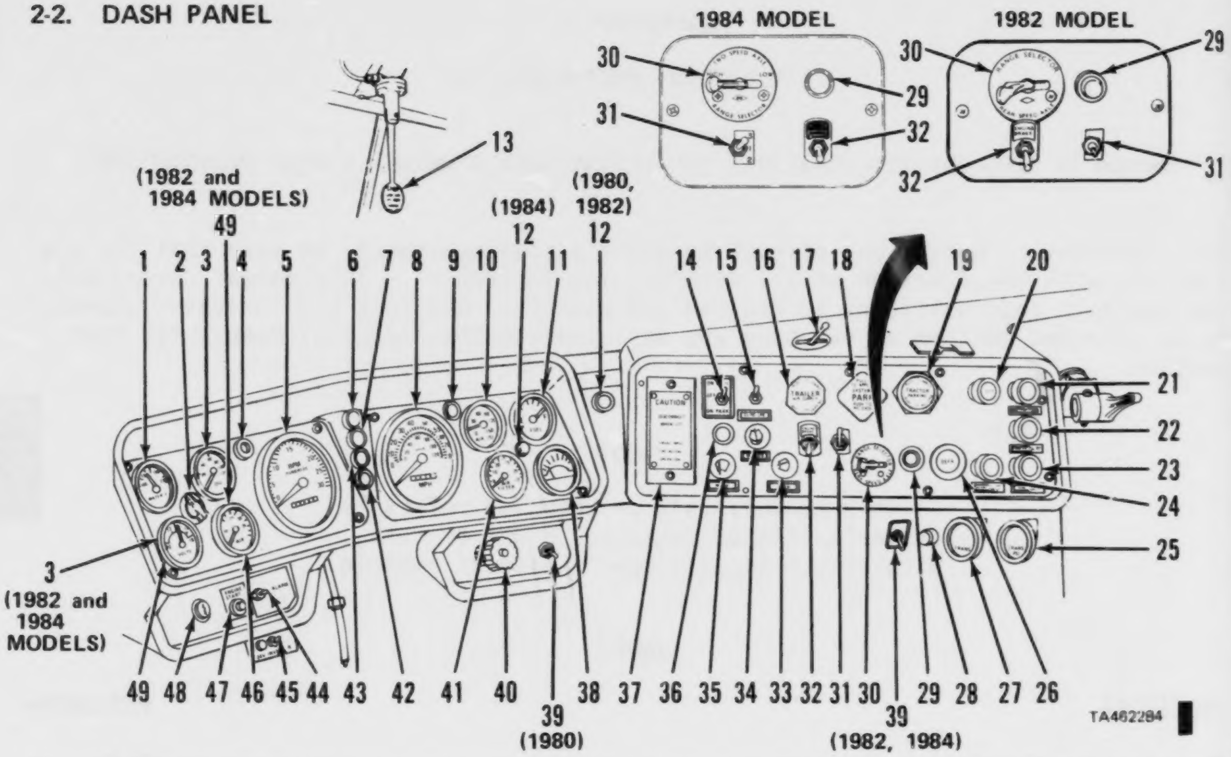
Passenger's Seat	2-6
Door	2-7
Radio Power Supply	2-8
Curbside	2-9
Roadside	2-10

2-2. DASH PANEL


1984 MODEL
1982 MODEL
30
31
29
32
30
29
32
31
13
(1982 and 1984 MODELS)
49
(1984)
12
(1980, 1982)
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(1982 and 1984 MODELS)
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(1980)
38
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33
32
31
30
39
(1982, 1984)
29
28
27
26
TA462284

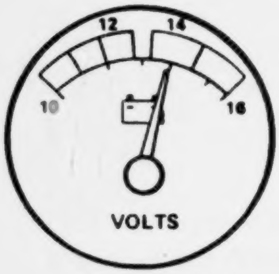
KEY	CONTROL OR INDICATOR	FUNCTION
1	Water Temperature Gage	Indicates engine coolant temperature. Normal range is 165°F-195°F (73.9°C-90.6°C).
2	Air Suspension Control Switch	Activates air suspension system.
3	Oil Pressure Gage	Indicates engine lubricating oil pressure. Normal range at 225°F (107.2°C): 15 psi (103 kPa) idle; 35-45 psi (241-310 kPa) rated speed.
4	Left Turn Signal Indicator	Flashes when left turn is signaled.
5	Tachometer	Indicates engine revolutions per minute and cumulative engine operating hours.

KEY	CONTROL OR INDICATOR	FUNCTION
6	High Beam Indicator	Illuminates when headlights are on high beam.
7	Low Air Pressure Warning Light	Illuminates when air pressure is under 60 psi (4.2 kg/cm2).
8	Speedometer	Indicates road speed in miles/kilometers per hour. Indicates cumulative miles traveled.
9	Right Turn Signal Indicator	Flashes when right turn is signaled.
10	Dual Air Pressure Gage	Indicates air pressure in braking systems. White pointer: A-system rear axle; red pointer: B-system front axle. For normal operation, both pointers should be equal and read 105 - 120 psi (7.4 - 8.4 kg/cm^2).
11	Fuel Gage	Indicates fuel level in tank.
12	Interaxle Lock Indicator Light	Illuminates when rear axle differentials are locked.
13	Low Air Pressure Warning Flag	Drops to signal low air pressure. Cannot be reset until air pressure is restored.
14	Headlight/Parking Light Switch	Controls headlights, cab marker lights, and taillights.
15	Clearance Light Switch	Controls clearance lights.
16	Differential Lockout Control	Locks and unlocks interaxle differential on rear tandem axle.

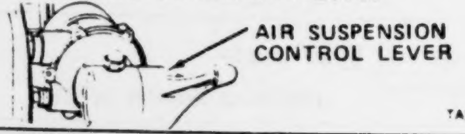
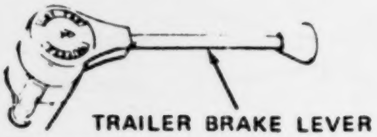
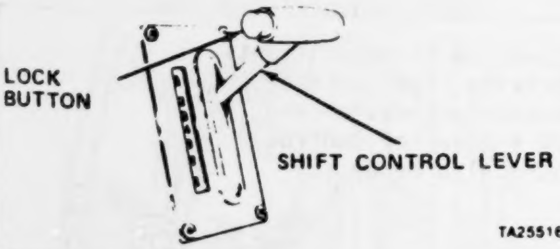
KEY	CONTROL OR INDICATOR	FUNCTION
17	Trailer Air Supply Control	Charges trailer Air System when pushed in. Closes tractor air protection valve when pulled out.
18	System Park Control	Controls trailer air valve. Provides parking brakes and emergency stop when pulled out.
19	Tractor Parking Control	Provides parking brakes for tractor only when pulled out.
20	Lighter	Cigar lighter. Provides "plug-in" power source for 12 vdc.
21	Fan Control	Sets low/medium/high fan speeds for heater fan.
22	Fresh Air Control	Pulled out, fresh air is delivered to cab. Closed, recirculates cab air.
23	Heat Control	Pulled Out: Maximum heat. Pushed In: No heat.
24	Defroster	Directs heated air to windshield.
25	Transmission Oil Pressure	Indicates pressure of transmission oil. Normal is 90 psi (620 kPa) at idle.
26	Defroster Fan	Controls speed of fan.
27	Transmission Oil Temperature	Indicates temperature of transmission oil. Normal is 160°F-220°F (71°C-104°C).

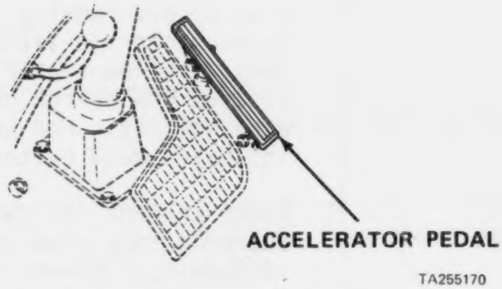
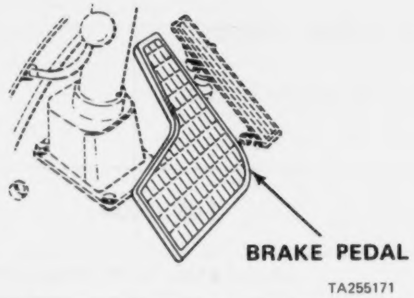
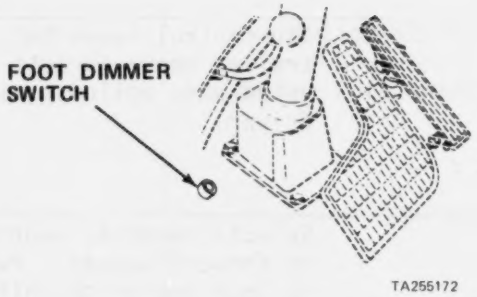
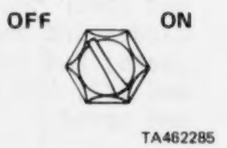
KEY	CONTROL OR INDICATOR	FUNCTION
28	Transmission Temperature Warning Light	Indicates high transmission oil temperature.
29	Low Range Indicator Light	Illuminates when rear axle is in low range.
30	Rear Axle Range Selector	Controls low or high range rear axle gearing.
31	Engine Brake Selector Switch	Provides three-position control of retardation available from engine brake.
32	Engine Brake Switch	On/Off control for engine brake.
33	Right Windshield Wiper Control	Controls speed of right windshield wiper.
34	Windshield Washer Control	Directs cleaning fluid to outside of windshield.
35	Left Windshield Wiper Control	Controls speed of left windshield wiper.
36	Panel Light Control	Controls intensity of instrument panel lighting.
37	Arctic Winterization Warning Light	Light illuminates when 110 V 60 Hz power is connected to truck chassis. Power connection must be removed before truck chassis is moved.
38	Exhaust Pyrometer	Measures temperature of exhaust gas. Maximum temperature for safe operation is 1100°F (593.3°C).
39	Driving Light Switch	Controls two lower auxiliary lights. (Note: Must be on for blackout lights to work.)

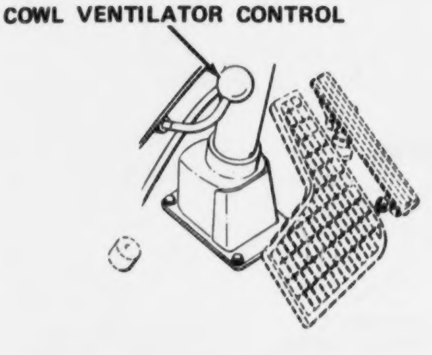
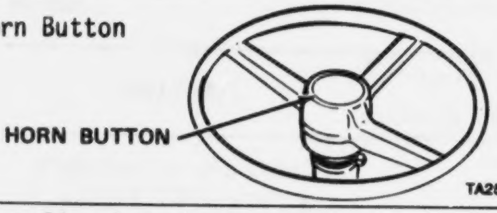
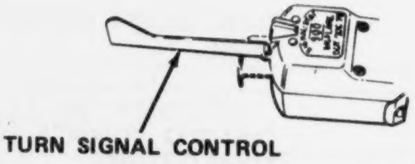
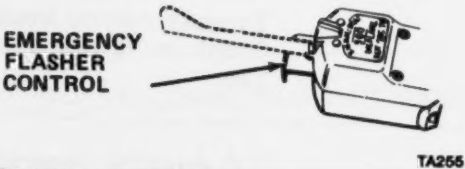
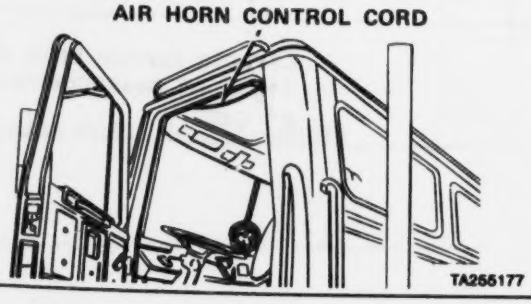
KEY	CONTROL OR INDICATOR	FUNCTION
40	Hand Throttle	Controls engine speed without use of accelerator pedal. Rotated to left or right to vary engine speed.
41	Air Filter Restriction Gage	Indicates restriction to air flow in air inlet cleaner.
42	High Coolant Temperature Warning Light	Illuminates when engine coolant temperature is too high.
43	Low Oil Pressure Warning Light	Illuminates when engine oil pressure is too low.
44	Backup Alarm Cut Off	Disconnects backup alarm.
45	24 V Inverter Control	Converts 12 V dc power to 24 V dc power for systems/equipment requiring 24 V power. Light illuminates when inverter is on. (Note: Must be on for blackout lights to work.)
46	Air Pressure Gage	Indicates air pressure in air suspension system.
47	Pushbutton Starter Switch	Energizes starter motor.
48	Master Lock Switch	Controls electrical system. Accessory position (left) energizes accessory equipment. On position (right) provides power to starter. In off position, key can be removed or inserted and electrical power (except lights) circuits are open.

KEY	CONTROL OR INDICATOR	FUNCTION
49	Battery Condition Charging Indicator  TA255166	Left segment indicates battery charge when engine is not running. Green sector is satisfactory. Yellow sector indicates low charge or worn battery. Red sector indicates dead battery. Right segment indicates charging rate when engine is running. Green segment indicates charge at rate set by voltage regulator. Red segment indicates overcharge.

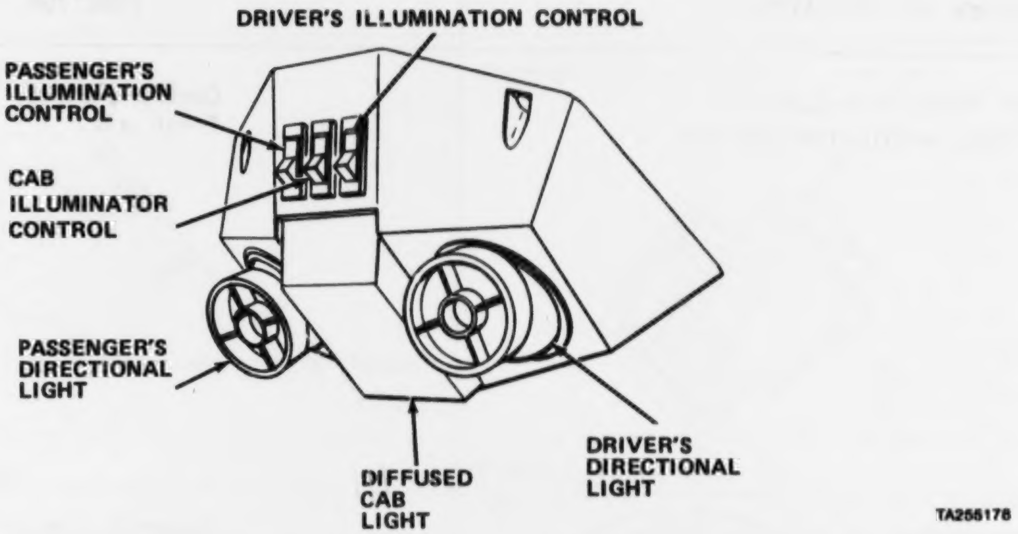
2-3. HAND AND FOOT CONTROLS

CONTROL OR INDICATOR	FUNCTION
Air Suspension Control Lever  TA255167	Regulates air pressure in air suspension system.
Trailer Brake Lever  TA255168	Air control lever for trailer brake is activated when pulled toward driver.
Shift Control Lever  TA255169	Selects reverse, neutral or forward speeds. Push in lock button to shift. Drive (D) range includes drive and all four lower gears; 4th includes 4th and lower gears; 3rd includes 3rd and lower gears; 2nd includes 2nd and 1st; 1st allows only one speed.

CONTROL OR INDICATOR	FUNCTION
Accelerator Pedal  ACCELERATOR PEDAL TA255170	Controls engine speed.
Brake Pedal  BRAKE PEDAL TA255171	Depressed to brake vehicle.
Foot Dimmer Switch  FOOT DIMMER SWITCH TA255172	High and low beam headlamp control.
Blackout Mode  OFF ON TA462285	Turns on blackout lights. Driving light switch, masterlock switch and 24 V inverter control must also be on.

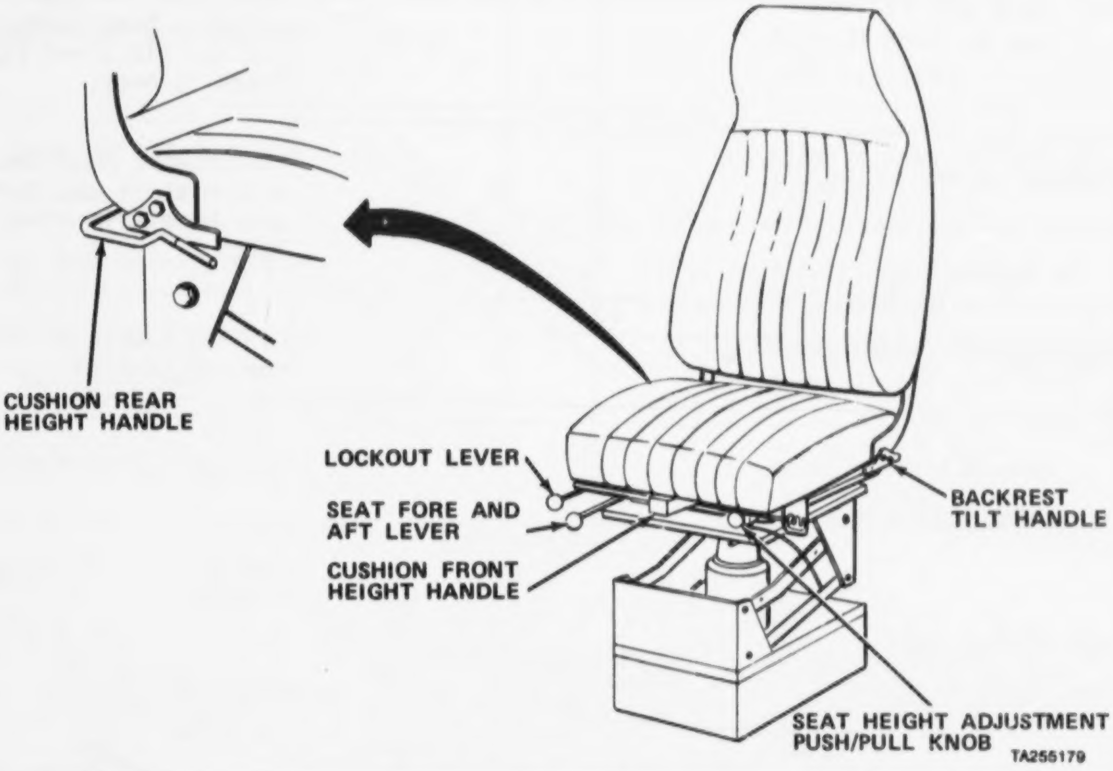
CONTROL OR INDICATOR	FUNCTION
Cowl Ventilator Control  COWL VENTILATOR CONTROL TA255173	Controls floor level fresh air.
Horn Button  HORN BUTTON TA255174	Controls electric horn.
Turn Signal Control  TURN SIGNAL CONTROL TA255175	Controls right and left turn signals.
Emergency Flasher Control  EMERGENCY FLASHER CONTROL TA255176	Converts turn signals into emergency flashing lights.
Air Horn Control Cord  AIR HORN CONTROL CORD TA255177	Operates air (pneumatic) horn.

2-4. ILLUMINATION CONTROLS


DRIVER'S ILLUMINATION CONTROL
PASSENGER'S ILLUMINATION CONTROL
CAB ILLUMINATOR CONTROL
PASSENGER'S DIRECTIONAL LIGHT
DIFFUSED CAB LIGHT
DRIVER'S DIRECTIONAL LIGHT
TA255178

CONTROL OR INDICATOR	FUNCTION
Passenger's Illumination Control	Controls passenger's directional light.
Cab Illuminator Control	Turns on/off diffused cab light.
Driver's Illumination Control	Controls driver's directional light.
Driver's Directional Light	Directs narrow beam of light on driver's side of cab.
Diffused Cab Light	Illuminates interior of cab.
Passenger's Directional Light	Directs narrow beam of light on passenger's side of cab.

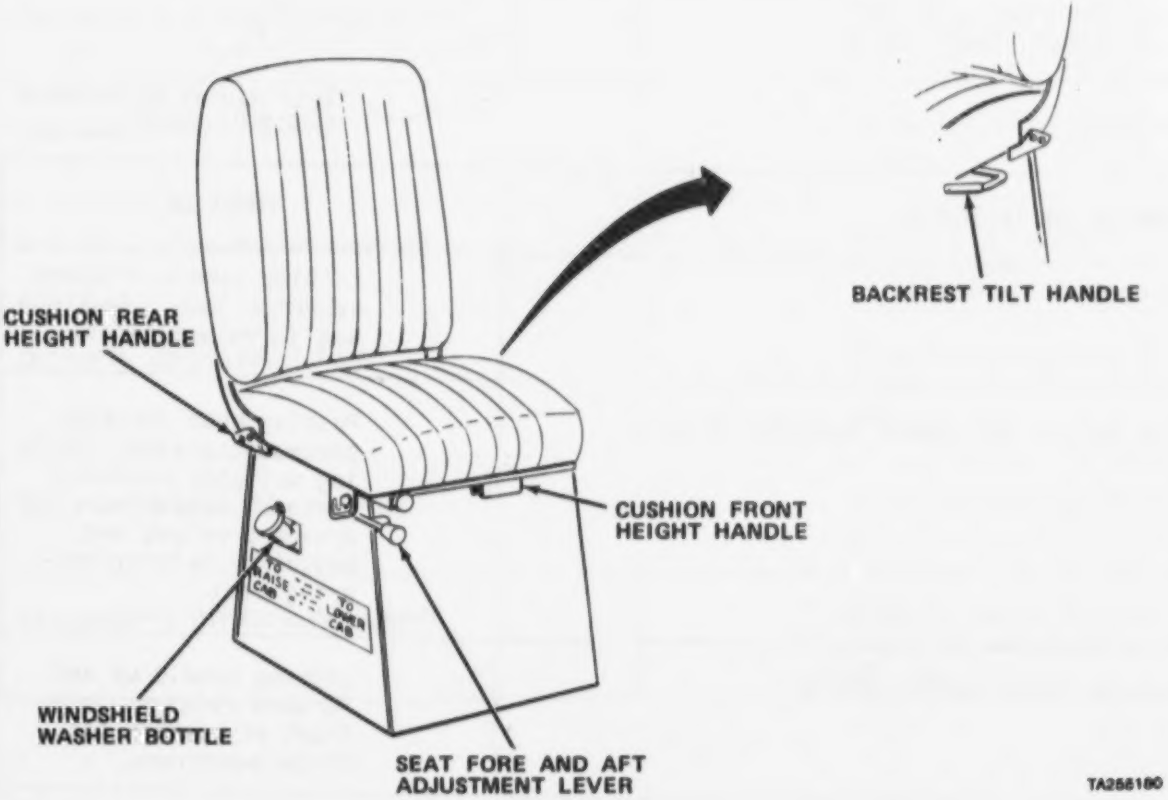
2-5. DRIVER'S SEAT


CUSHION REAR HEIGHT HANDLE
LOCKOUT LEVER
SEAT FORE AND AFT LEVER
CUSHION FRONT HEIGHT HANDLE
BACKREST TILT HANDLE
SEAT HEIGHT ADJUSTMENT PUSH/PULL KNOB
TA255179

CONTROL OR INDICATOR	FUNCTION
Backrest Tilt Handle	Lifting handle releases backrest lock. Backrest has three positions.
Seat Height Adjustment Push/Pull Knob	Pushing knob inflates pneumatic piston. Pulling deflates pneumatic piston. Compensates for driver's weight and height by raising/lowering seat.
Cushion Front Height Handle	Lifting handle up and forward releases lock. Front of cushion has three positions.

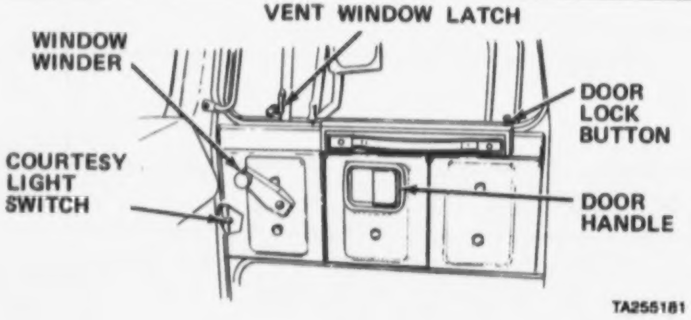
CONTROL OR INDICATOR	FUNCTION
Seat Fore and Aft Lever	Move lever to right to unlock. Seat locks in 1/2 in. (12.7 mm) steps, front to back.
Lockout Lever	Disconnects front-rear motion shock absorber when handle is moved to left.
Cushion Rear Height Handle	Lifting handle up raises rear of cushion.

2-6. PASSENGER'S SEAT


BACKREST TILT HANDLE
CUSHION REAR HEIGHT HANDLE
CUSHION FRONT HEIGHT HANDLE
TO RAISE CAB
TO LOWER CAB
WINDSHIELD WASHER BOTTLE
SEAT FORE AND AFT ADJUSTMENT LEVER
TA256180

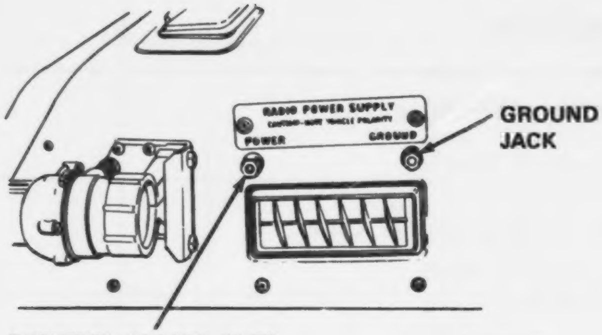
CONTROL OR INDICATOR	FUNCTION
Cushion Front Height Handle	Adjusts front height of seat cushion.
Seat Fore and Aft Adjustment Lever	Adjusts seat in fore/aft direction.
Cushion Rear Height Handle	Adjusts rear height of seat cushion.
Back Rest Tilt Handle	Adjusts back rest tilt.
Windshield Washer Bottle	Holds fluid for windshield washer system.

2-7. DOOR


VENT WINDOW LATCH
WINDOW WINDER
DOOR LOCK BUTTON
COURTESY LIGHT SWITCH
DOOR HANDLE
TA255181

CONTROL OR INDICATOR	FUNCTION
Vent Window Latch	Unlocks and locks vent window.
Door Lock Button	Unlocks and locks door.
Door Handle	Opens door.
Window Winder	Opens/closes window.
Courtesy Light Switch	Turns on cab illumination when door is opened.

2-8. RADIO POWER SUPPLY

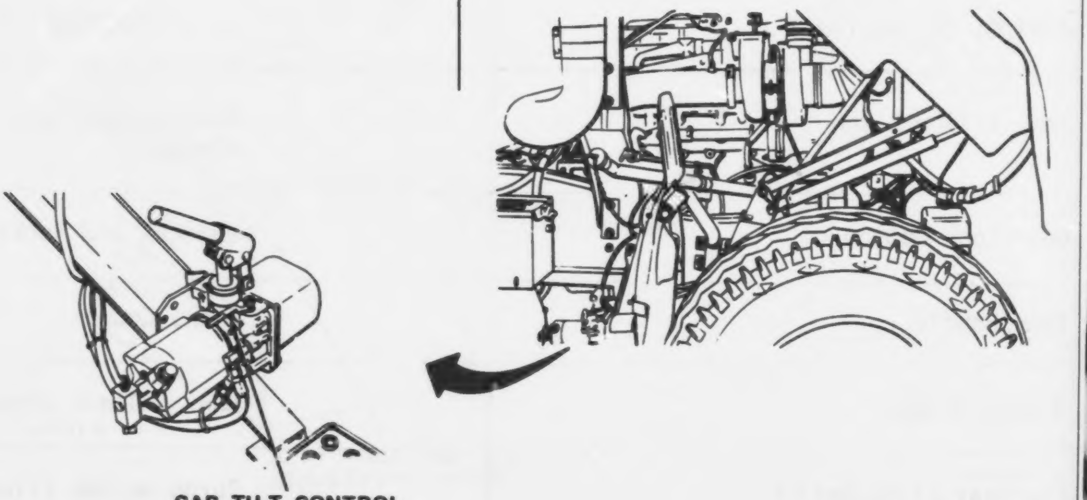

RADIO POWER SUPPLY
POWER
GROUND
GROUND JACK
POSITIVE 12 VDC JACK

TA255182

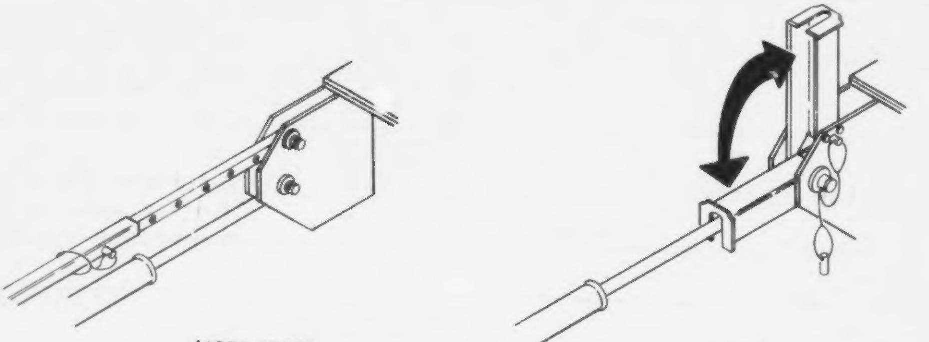
CONTROL OR INDICATOR	FUNCTION
Positive 24 vdc Jack	Power source for radio.
Ground Jack	Ground-to-vehicle wiring.

2-9. CURBSIDE

CONTROL OR INDICATOR	FUNCTION
Cab Tilt Control	Tilts cab for access to engine.

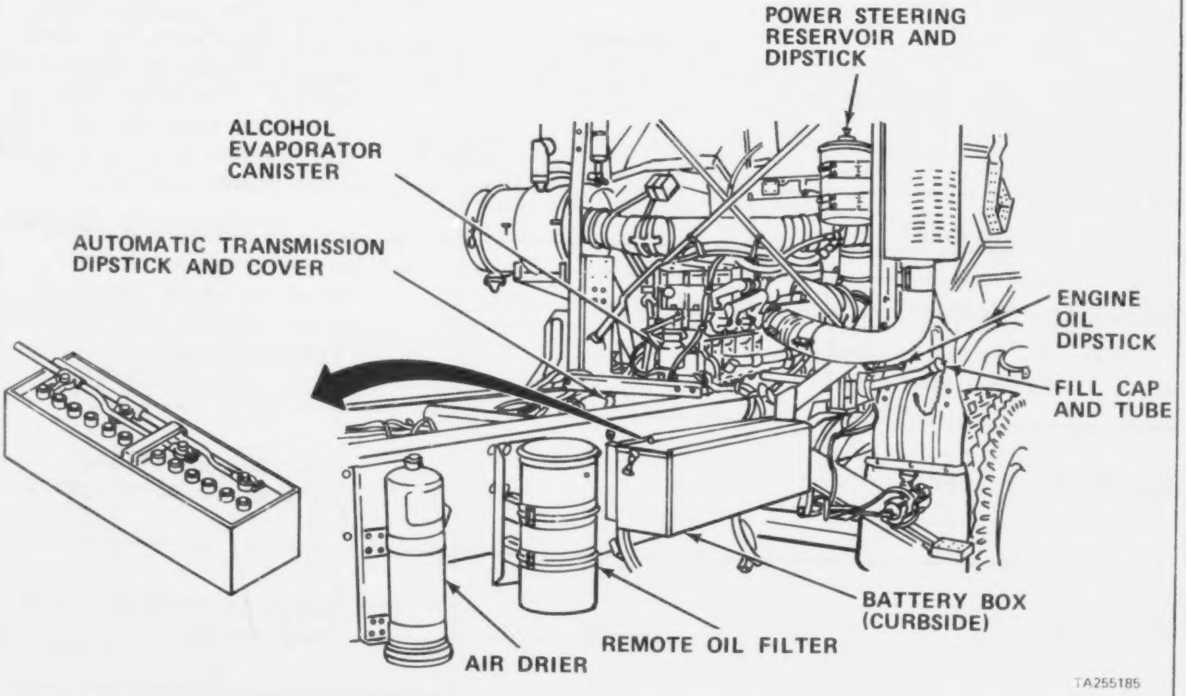

CAB TILT CONTROL

TA255183

<table>
<tr><th>CONTROL OR INDICATOR</th><th>FUNCTION</th></tr>
<tr><td>Cab Tilt Lock Pin</td><td>Locks cab in tilted position.</td></tr>
<tr><td colspan="2">


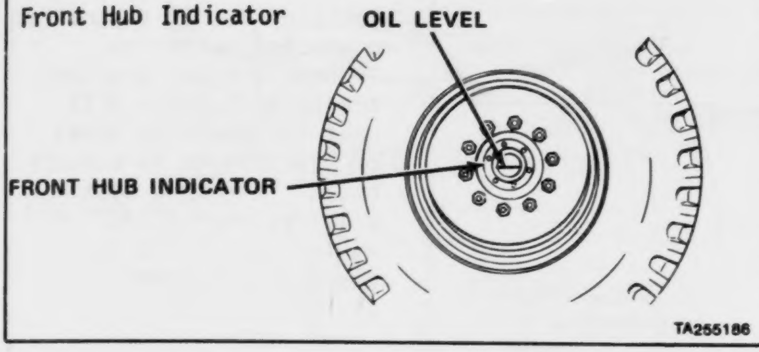
(1980,1982)

(1984)

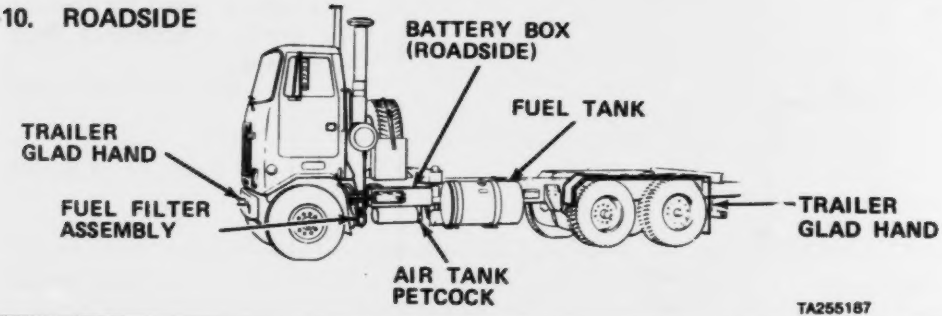
</td></tr>
<tr><td colspan="2">


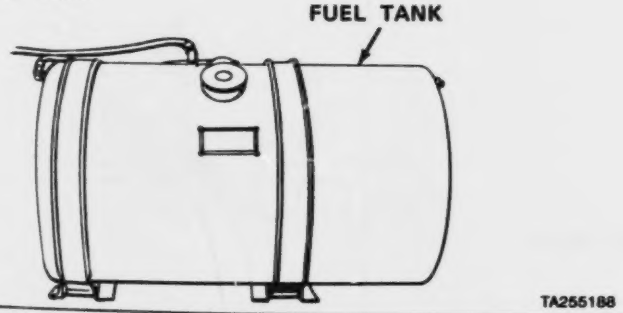
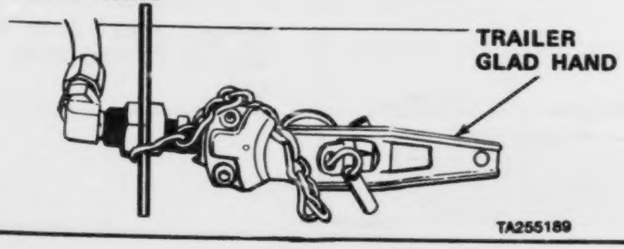
POWER STEERING RESERVOIR AND DIPSTICK
ALCOHOL EVAPORATOR CANISTER
AUTOMATIC TRANSMISSION DIPSTICK AND COVER
ENGINE OIL DIPSTICK
FILL CAP AND TUBE
BATTERY BOX (CURBSIDE)
REMOTE OIL FILTER
AIR DRIER
TA255185
</td></tr>
<tr><td>Power Steering Reservoir and Dipstick</td><td>Stores power steering hydraulic fluid. Dipstick indicates level of fluid. Power steering fluid is added through cap.</td></tr>
</table>

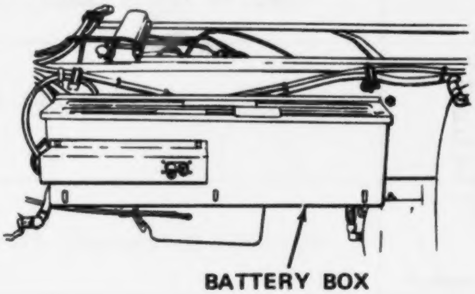
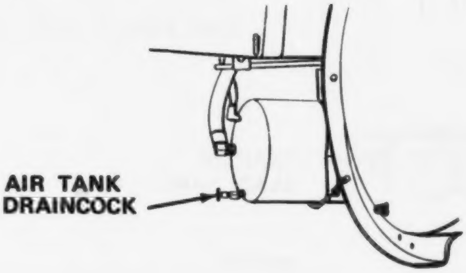
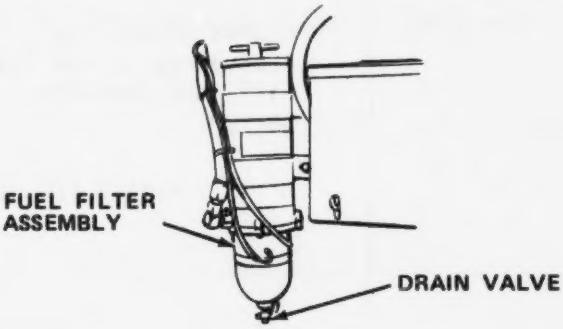
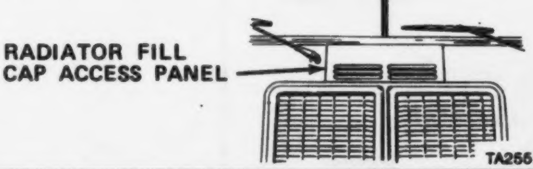
CONTROL OR INDICATOR	FUNCTION
Engine Oil Dipstick	Used to check level of engine oil.
Fill Cap and Tube	Service point for engine oil.
Alcohol Evaporator Canister	Reservoir for alcohol used in anti-icing in air compressor system.
Battery Box (Curbside)	Contains two 12 V parallel connected batteries. Removable cover provides access to battery fill caps for checking level of electrolyte in battery cells. Electric heat is provided when Arctic Winterization Kit is plugged into power source.
Automatic Transmission Dipstick and Cover	Used to check level of transmission oil and add transmission oil.
Remote Oil Filter	Provides additional filtration of engine oil.
Air Drier	Extracts moisture from compressed air.

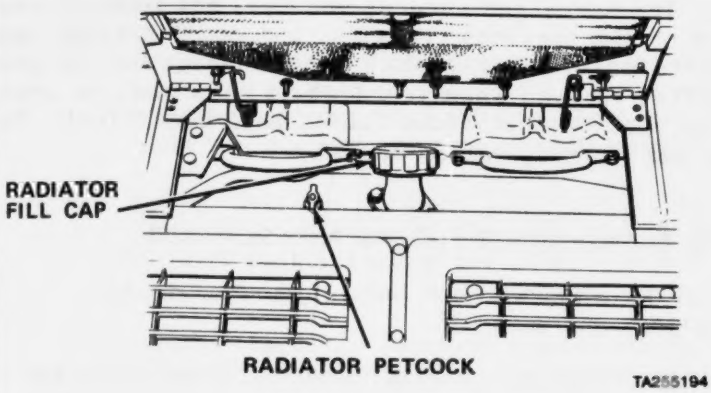
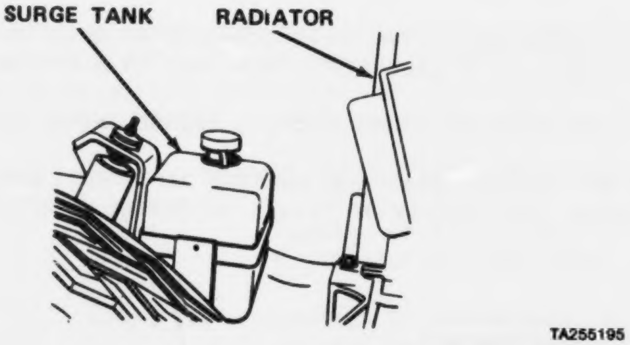
CONTROL OR INDICATOR	FUNCTION
Front Hub Indicator  OIL LEVEL FRONT HUB INDICATOR TA255186	Indicates level of lubricant in front hub.

2-10. ROADSIDE


BATTERY BOX (ROADSIDE)
FUEL TANK
TRAILER GLAD HAND
FUEL FILTER ASSEMBLY
TRAILER GLAD HAND
AIR TANK PETCOCK
TA255187

CONTROL OR INDICATOR	FUNCTION
Fuel Tank  FUEL TANK TA255188	Stores diesel fuel. Remove cap to add fuel. Fill tube contains screen.
Trailer Glad Hand  TRAILER GLAD HAND TA255189	Air connection for trailer.

CONTROL OR INDICATOR	FUNCTION
Battery Box (Roadside)  BATTERY BOX TA255190	Contains two 12 V parallel connected batteries. Removable cover provides access to battery fill caps for checking level of electrolyte in battery cells. Electric heat is provided when Artic Winterization Kit is plugged into power source.
Air Tank Draincock  AIR TANK DRAINCOCK TA255191	Draincock used to manually drain condensate from air tank.
Fuel Filter Assembly Drain Valve  FUEL FILTER ASSEMBLY DRAIN VALVE TA255192	To drain fuel sediment bowl.
Radiator Fill Cap Access Panel  RADIATOR FILL CAP ACCESS PANEL TA255193	Hinged panel provides access to radiator fill cap.

CONTROL OR INDICATOR	FUNCTION
 RADIATOR FILL CAP RADIATOR PETCOCK TA255194	
Radiator Fill Cap	Removed to add coolant.
Radiator Petcock	Used to check level of coolant.
Surge Tank  SURGE TANK RADIATOR TA255195	Receives expansion of radiator coolant.

NOTE

Coolant may be checked or added through access panel.

Section II. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

2-11. GENERAL. Every mission begins and ends with the paperwork. There isn't much of it, but you have to keep it up. The forms and records you fill out have several uses. They are a permanent record of the services, repairs, and modifications made on your vehicle. They are reports to organizational maintenance and to your commander. And they are a checklist for you when you want to know what is wrong with the vehicle after its last use, and whether those faults have been fixed. For the information you need on forms and records, see TM 38-750.

2-12. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES

a. Do your before (B) PREVENTIVE MAINTENANCE just before you operate the vehicle. Pay attention to the CAUTIONS and WARNINGS.

b. DURING (D) checks and services of PREVENTIVE MAINTENANCE will be performed while the equipment and/or its component systems are in operation. Pay attention to the CAUTIONS and WARNINGS.

c. Do your after (A) PREVENTIVE MAINTENANCE right after operating the vehicle. Pay attention to the CAUTIONS and WARNINGS.

d. Do your weekly (W) PREVENTIVE MAINTENANCE weekly.

e. Do your monthly (M) PREVENTIVE MAINTENANCE once a month.

f. If something doesn't work, troubleshoot it with the instructions in this manual or notify your supervisor.

g. Always do your PREVENTIVE MAINTENANCE in the same order so it gets to be a habit. Once you've had some practice, you'll spot anything wrong in a hurry.

h. When you do your PREVENTIVE MAINTENANCE, take along a rag or two.

i. While performing PMCS observe caution notes and warning paragraphs preceeding those operations which could endanger your safety or result in damage to the equipment.

WARNING

DRY CLEANING SOLVENT P-D-680 IS TOXIC AND FLAMMABLE. WEAR PROTECTIVE GOGGLES AND GLOVES AND USE ONLY IN WELL-VENTILATED AREA. AVOID CONTACT WITH SKIN, EYES, AND CLOTHES AND DO NOT BREATHE VAPORS. DO NOT USE NEAR OPEN FLAME OR EXCESSIVE HEAT. IF YOU BECOME DIZZY WHILE USING CLEANING SOLVENT, GET FRESH AIR IMMEDIATELY AND GET MEDICAL AID. IF CONTACT WITH SKIN OR CLOTHING IS MADE, FLUSH WITH WATER. IF CONTACT WITH EYES IS MADE, WASH YOUR EYES WITH WATER AND GET MEDICAL AID IMMEDIATELY.

j. If anything looks wrong and you can't fix it, write it on your DA Form 2404. The number column is the source for the numbers used on the TM Number Column on DA Form 2404. If you find something seriously wrong, report it to Organizational Maintenance RIGHT NOW.

(1) Keep it clean: Dirt, grease, oil and debris only get in the way and may cover up a serious problem. Clean as you work and as needed. Use dry cleaning solvent (P-D-680) to clean metal surfaces. Use soap and water when you clean rubber or plastic material.

(2) Bolts, nuts and screws: Check that they are not loose, missing, bent or broken. You can't try them all with a tool, of course, but look for chipped paint, bare metal or rust around bolt heads. Tighten any that you find loose.

(3) Welds: Look for loose or chipped paint, rust or gaps where parts are welded together. If you find a bad weld, report it to organizational maintenance.

(4) Electric wires and connectors: Look for cracked or broken insulation, bare wires and loose or broken connectors. Tighten loose connections and make sure the wires are in good condition.

(5) Hoses and fluid lines: Look for wear, damage and leaks. Make sure clamps and fittings are tight. Wet spots show leaks, of course, but a stain around a fitting or connector can mean a leak. If a leak comes from a loose fitting or connector, tighten it. If something is broken or worn out, either correct it or report it to direct support (refer to Maintenance Allocation Chart).

k. It is necessary for you to know how fluid leaks affect the status of your equipment. The following are definitions of the types/classes of leakage you need to know to be able to determine the status of your equipment. Learn and be familiar with them and REMEMBER -- When in doubt, notify your supervisor.

LEAKAGE DEFINITIONS FOR OPERATOR/CREW PMCS

Class I	Seepage of fluid (as indicated by wetness or discoloration) not great enough to form drops.
Class II	Leakage of fluid great enough to form drops, but not enough to cause drops to drip from the item being checked/inspected.
Class III	Leakage of fluid great enough to form drops that fall from the item being checked/inspected.

CAUTION

EQUIPMENT OPERATION IS ALLOWABLE WITH MINOR LEAKAGES (CLASS I OR II). OF COURSE, CONSIDERATION MUST BE GIVEN TO THE FLUID CAPACITY IN THE ITEM/SYSTEM BEING CHECKED/INSPECTED. WHEN OPERATING WITH CLASS I OR II LEAKS, CONTINUE TO CHECK FLUID LEVELS AS REQUIRED ON YOUR PMCS. CLASS III LEAKS SHOULD BE REPORTED TO YOUR SUPERVISOR OR ORGANIZATIONAL MAINTENANCE.

Table 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

ITEM NO.	INTERVAL					ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	W	M		
						TRUCK CHASSIS	
						NOTE: The following items are to be completed on a walk around inspection.	
1						FRAME.	
	●					a. Visually check for damage to bumpers, springs, shock absorbers, air suspension, cab, mirrors, windshield, wiper blades and arms, and glass. Check all security locking and fastening devices.	
				●		b. Check frame rails, cross members, side rails, front frame rail extentions, and bolsters for loose, broken, or missing bolts and cracks.	Loose, cracked or broken rails, bolsters, and cross-members. Broken welds or bolts.
	●					c. Visually check vehicle for fluid leakage.	Class III leaks noted.

Table 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Cont)

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

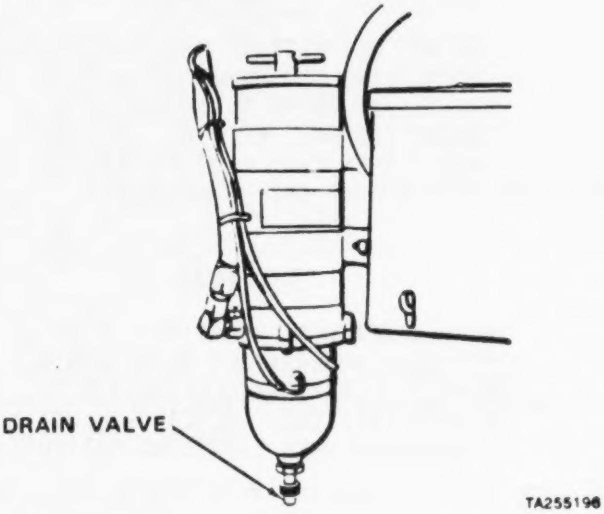
ITEM NO.	INTERVAL					ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	W	M		
						TRUCK CHASSIS	
2						FUEL FILTER ASSEMBLY.  	
	●					a. Visually inspect glass bowl for contamination, damage, or leakage. Drain into proper container if required. If large amounts of water or other contaminants are noted, notify your supervisor and have the fuel tank checked.	Class III leaks noted.
	●					b. Check security of electrical leads.	

Table 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Cont)

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

ITEM NO.	INTERVAL					ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	W	M		
						TRUCK CHASSIS	
3						BATTERIES.	
						WARNING DO NOT GET BATTERY ELECTROLYTE ON YOUR SKIN, CLOTHING, OR IN YOUR EYES. IT IS AN ACID WHICH CAN CAUSE INJURY. KEEP ALL SPARKS AND FLAMES AWAY FROM BATTERIES. THE BATTERY GAS IS EXPLOSIVE. CAUTION IN COLD WEATHER OPERATIONS, CHARGE BATTERIES IMMEDIATELY AFTER ADDING WATER WITH BATTERY ELECTROLYTE TO PREVENT FREEZING. BE CAREFUL NOT TO OVERFILL WHEN SERVICING BATTERIES.	
				●		Inspect for obvious defects which make batteries unserviceable, such as cracked, leaking case, broken, loose or burnt battery terminal posts and cables. Check fluid level and add clean, colorless, drinkable water as required.	One or more missing or unserviceable batteries
4						WHEELS AND TIRES.	
	●					a. Determine general condition and serviceability of each tire, including spare. Remove all lodged objects from between treads. Visually check for obviously low tire. Service as required. Tire pressure is 55 psi (379 kPa).	One or more tires on front axle or two tires on same side of rear axles are flat, unserviceable or missing.

Table 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Cont)

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

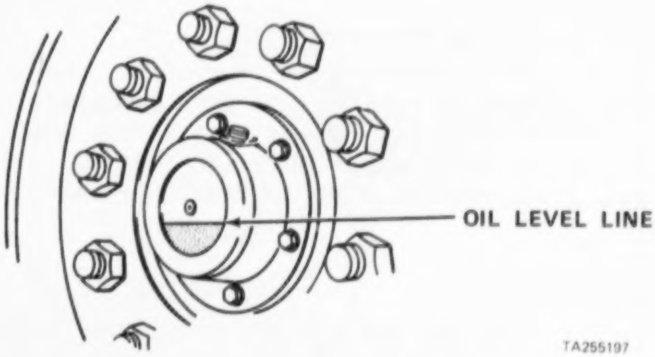
ITEM NO.	INTERVAL					ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	W	M		
						TRUCK CHASSIS	
4						WHEELS AND TIRES (Cont).	
						 TA255197	
	●					b. Check oil level on front axle hub. Notify Organizational Maintenance to have hub serviced if oil level is low.	
				●		c. Check for proper tire pressure. Tire pressure is 55 psi (379 kPa).	
5						LIGHTS.	
	●					a. Clean all light lenses. Check for cracked, damaged, or missing components.	
		●				b. Check lights for proper operation.	

Table 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Cont)

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

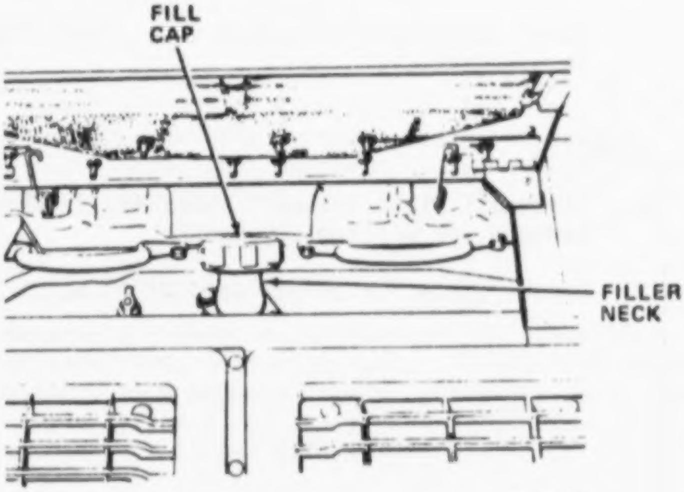
ITEM NO.	INTERVAL					ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	W	M		
						TRUCK CHASSIS	
6						COOLING SYSTEM.	
						WARNING TAKE EXTREME CARE WHEN REMOVING TANK FILL CAP IF TEMPERATURE GAGE READS ABOVE 195°F (90.6°C) TO PREVENT BURNS OR SERIOUS INJURY.	
						CAUTION DO NOT ADD COOLANT TO COOLING SYSTEM WHEN ENGINE IS HOT UNLESS ENGINE IS RUNNING. ADD COOLANT SLOWLY TO PREVENT ENGINE DAMAGE.	
							
	●					Remove cap and visually check coolant level. Level should be at bottom of filler neck. Add coolant as required. reference TB 750-651 and paragraph 3-10 of this TM.	

Table 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Cont)

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

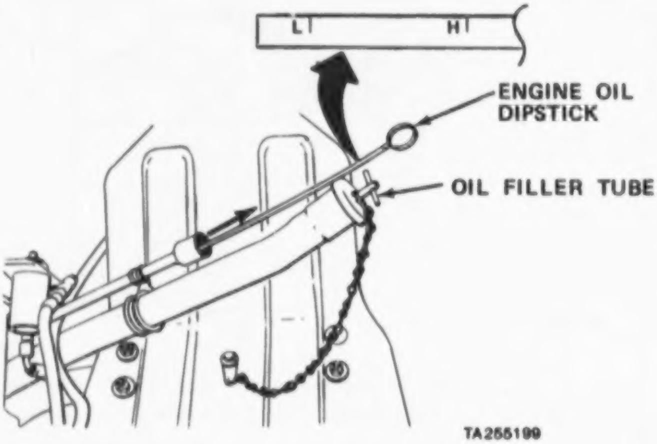
ITEM NO.	INTERVAL					ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	W	M		
						TRUCK CHASSIS	
7						ENGINE OIL.  L H ENGINE OIL DIPSTICK OIL FILLER TUBE TA255199	
	●					a. Check level of engine oil. Oil should be between L (Low Mark) and H (High Mark) on dipstick. Add oil as required to bring oil level to H (High Mark). Reference LO 9-2320-281-12. **NOTE** Maximum oil consumption with less than 15,000 miles is one quart per 166 miles. Maximum oil consumption with more than 15,000 miles is one quart per 250 miles.	
	●					b. Examine oil on dipstick for contaminants such as water droplets.	Any water on dipstick.

Table 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Cont)

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

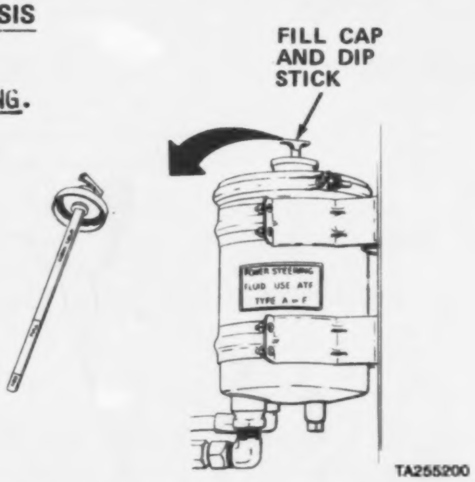
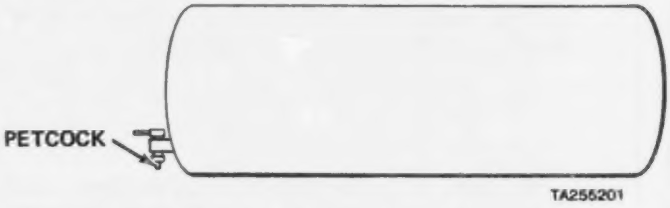
ITEM NO.	INTERVAL					ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	W	M		
						TRUCK CHASSIS	
8						POWER STEERING.  FILL CAP AND DIP STICK POWER STEERING FLUID USE ATF TYPE A – F TA255200	
	●					Check power steering fluid level with dipstick. Replenish as required, to full mark on dipstick.	
9						AIR RESERVOIRS.  PETCOCK TA255201	
	●					a. Close reservoirs' petcocks.	
			●			b. Drain reservoirs at petcocks.	
						NOTE Air reservoirs are fitted with automatic spitter valves to discharge moisture. The operator still must drain reservoirs manually on all tanks and check petcocks after operation.	

Table 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Cont)

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

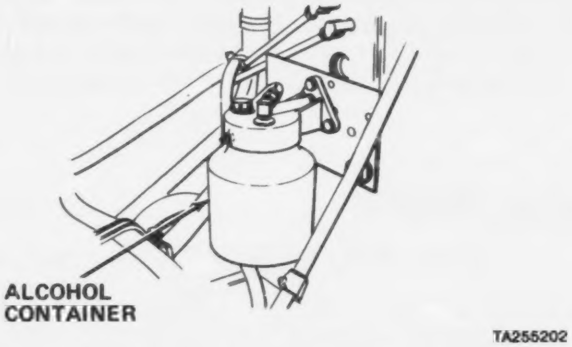
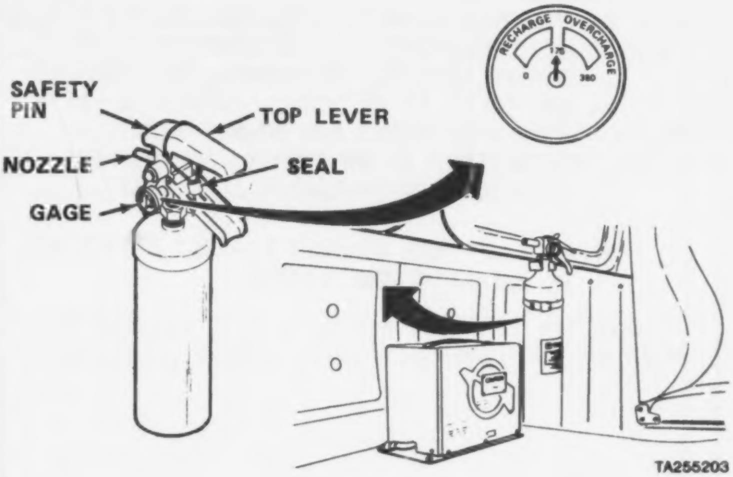
ITEM NO.	INTERVAL					ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	W	M		
						TRUCK CHASSIS	
10						ALCOHOL EVAPORATOR (Cold Weather Operation).  ALCOHOL CONTAINER TA255202	
	●					Check for proper alcohol level. Add alcohol as required.	
11						FIRE EXTINGUISHER.  RECHARGE OVERCHARGE 0 175 350 SAFETY PIN TOP LEVER NOZZLE SEAL GAGE TA255203	

Table 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Cont)

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

ITEM NO.	INTERVAL					ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	W	M		
						TRUCK CHASSIS	
11						FIRE EXTINGUISHER (Cont).	
	●					Make sure fire extinguisher is in cab. Check gage for proper pressure. Insure seal is not broken.	Seal missing or broken or improper pressure.
12						ENGINE OPERATION.	
						WARNING ● DO NOT OPERATE ENGINE IN ENCLOSED AREA UNLESS AREA IS ADEQUATELY VENTILATED. ● DO NOT IDLE ENGINE FOR LONG PERIODS WITHOUT MAINTAINING ADEQUATE VENTILATION IN CAB. ● DO NOT DRIVE VEHICLE WITH INSPECTION PLATES OR COVER PLATES REMOVED. ● BE ALERT AT ALL TIMES DURING VEHICLE OPERATION FOR EXHAUST ODORS AND EXPOSURE SYMPTOMS. IF EITHER ARE PRESENT, IMMEDIATELY VENTILATE CAB AND ANY PERSONNEL COMPARTMENTS. IF SYMPTOMS PERSIST, REMOVE AFFECTED PERSONNEL FROM VEHICLE AND TREAT AS FOLLOWS: EXPOSE TO FRESH AIR, KEEP WARM, AND DO NOT PERMIT EXERCISE. IF NECESSARY, ADMINISTER ARTIFICIAL RESPIRATION (SEE FM 21-11). ● BEST DEFENSE AGAINST EXHAUST POISONING IS ADEQUATE VENTILATION.	

Table 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Cont)

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

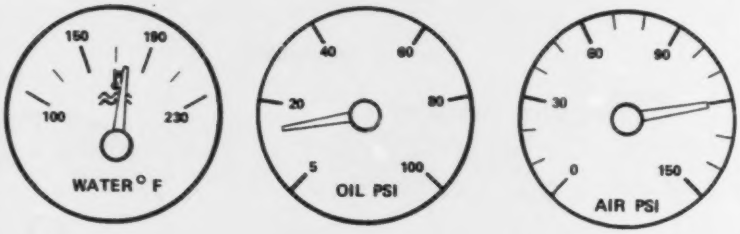
ITEM NO.	INTERVAL					ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	W	M		
						TRUCK CHASSIS	
12						ENGINE OPERATION (Cont).	
		●				With engine running, check idle speed and instruments. Listen for unusual noises or vibration. Stop engine immediately if unusual vibration, no oil pressure, or other danger is indicated.	Performance is inadequate, unusual noise, vibration or engine is inoperative.
13						INSTRUMENTS.	
						Idle engine. When engine is warm, check:	
		●				a. Water Temperature: Normal range is 165°F to 195°F (73.9°C to 90.6°C) after warmup.	If exceeds recommended operating range. Rapid rise in temperature or no reading.
						 150 190 100 230 WATER° F 40 60 20 80 5 100 OIL PSI 60 90 30 0 150 AIR PSI TA255204	
		●				b. Oil Pressure Gage: normal pressure at idle 15 psi (103 kPa). Engine will stop if oil pressure goes to zero.	No reading.
		●				c. Dual Air Pressure: Run engine until red and white pointers are equal and register 105 psi to 120 psi (723 kPa to 827 kPa).	One or both needles not in recommended range.
						NOTE If greater than a 12 psi (83 kPa) differential is noted, contact Organizational Maintenance.	

Table 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Cont)

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

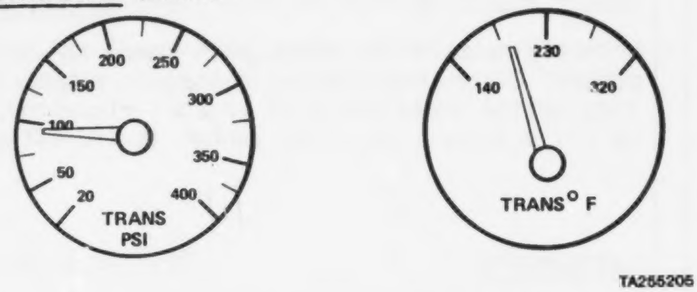
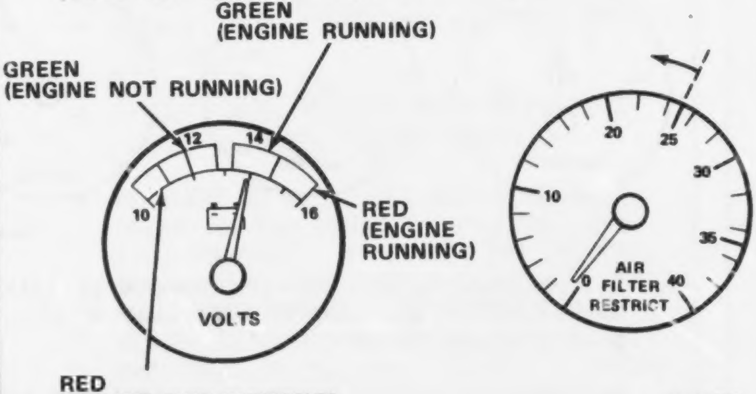
ITEM NO.	INTERVAL B	INTERVAL D	INTERVAL A	INTERVAL W	INTERVAL M	ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
						TRUCK CHASSIS	
13						INSTRUMENTS (Cont).	
						 200 250 150 300 100 350 50 400 20 TRANS PSI 230 140 320 TRANS° F TA255205	
		●				d. Transmission Oil Pressure: 90 psi (620 kPa) is normal at idle when brake applied and transmission shifted to forward or reverse.	No reading.
		●				e. Transmission Oil Temperature Gage: 160°F-220° F (71°C-104°C) is normal.	No reading, or abnormally high.
						 GREEN (ENGINE RUNNING) GREEN (ENGINE NOT RUNNING) 12 14 10 16 RED (ENGINE RUNNING) VOLTS RED (ENGINE NOT RUNNING) 20 25 30 10 35 0 40 AIR FILTER RESTRICT TA255206	
		●				f. Battery Condition Indicator: Switch on, engine not running -- Indicator in left green sector. Engine running -- Indicator in right green sector.	Indicator in red sector.
		●				g. Air Filter Restricter: Indicator under 25 vacuum in. (635 mm) of water. If over 25 (635 mm), notify Organizational Maintenance.	Over 25.

Table 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Cont)

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

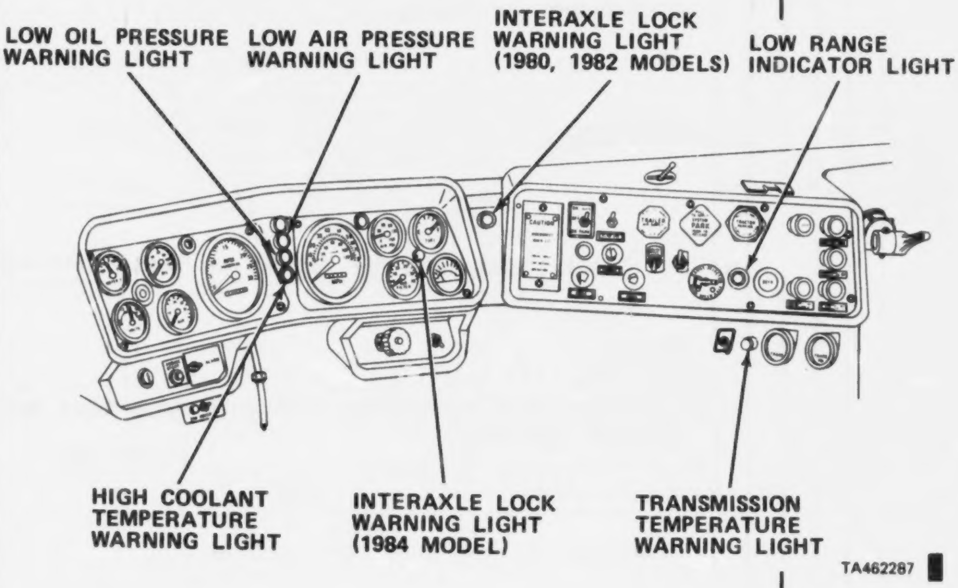
ITEM NO.	INTERVAL					ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	W	M		
						TRUCK CHASSIS	
14						CHECK INDICATOR/WARNING LIGHTS.  LOW OIL PRESSURE WARNING LIGHT LOW AIR PRESSURE WARNING LIGHT INTERAXLE LOCK WARNING LIGHT (1980, 1982 MODELS) LOW RANGE INDICATOR LIGHT HIGH COOLANT TEMPERATURE WARNING LIGHT INTERAXLE LOCK WARNING LIGHT (1984 MODEL) TRANSMISSION TEMPERATURE WARNING LIGHT TA462287	
		●				a. Low air pressure indicator light.	Illuminated.
		●				b. Low oil pressure warning light.	Illuminated.
		●				c. High coolant temperature warning light.	Illuminated.
		●				d. Interaxle lock warning light.	Illuminated when interaxle differentials are not locked.
		●				e. Low range indicator light.	Illuminated when not in low range.
		●				f. Transmission temperature warning light.	Illuminated.

Table 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Cont)

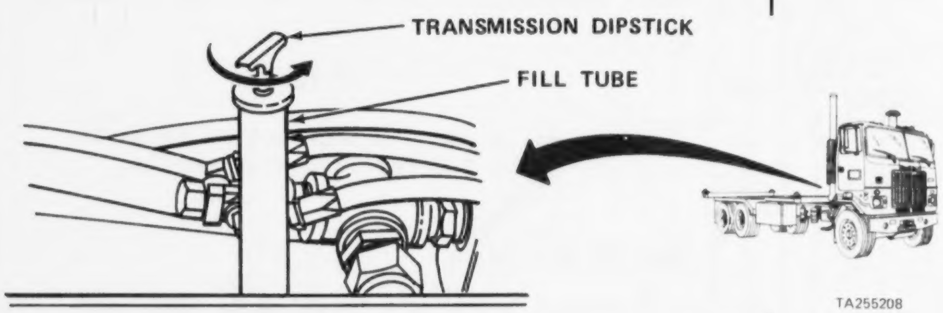
B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

ITEM NO.	INTERVAL					ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	W	M		
						TRUCK CHASSIS	
15						STEERING.	
		●				a. Check steering for unusual free play, binding, wander, or shimmy.	Loose or binding action or steering wheel difficult to turn, steering inoperative.
					●	b. Check pitman arm for cracks or loose fittings.	
16						BRAKES.	
		●				Make sure braking action is even, and brakes apply/ release smoothly.	Uneven braking action or brakes inoperative.
17						TRANSMISSION.	
		●				a. Check action of shift lever forward and reverse. Be sure shift points occur smoothly and there is no unusual noise or vibration.	Inoperative.
			●			b. Check for leaks.	Class III leaks.

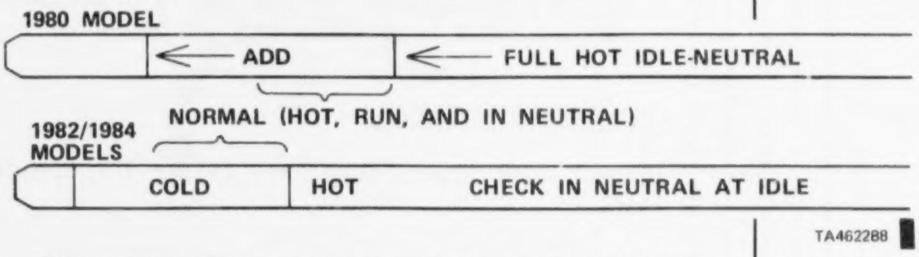
Table 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Cont)

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

ITEM NO.	INTERVAL B	D	A	W	M	ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
						TRUCK CHASSIS	
17						TRANSMISSION. (Cont)	


TRANSMISSION DIPSTICK
FILL TUBE
TA255208

ITEM NO.	INTERVAL B	D	A	W	M	ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	●					c. Clean around the dipstick and fill tube to remove any dirt that could fall into the fill tube.	


1980 MODEL
ADD
FULL HOT IDLE-NEUTRAL
NORMAL (HOT, RUN, AND IN NEUTRAL)
1982/1984 MODELS
COLD
HOT
CHECK IN NEUTRAL AT IDLE
TA462288

ITEM NO.	INTERVAL B	D	A	W	M	ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
						d. Check transmission level and have oil added or drained as needed:	
			●			(1) Hot check: Transmission oil operating temperature 160°F-220°F (71.1°C-104.4°C); engine at idle (575-650 rpm); Transmission selector in neutral; truck level. Oil level indicated in proper area on dipstick.	No oil level indicated. Water in oil.
		●				(2) Cold check: Transmission oil operating temperature 80°F-120°F (26.7°C-48.9°C); engine running for one minute minimum; engine at idle (575-650 rpm); Transmission selector in neutral. Oil level indicated in proper area on dipstick.	No oil level indicated. Water in oil.

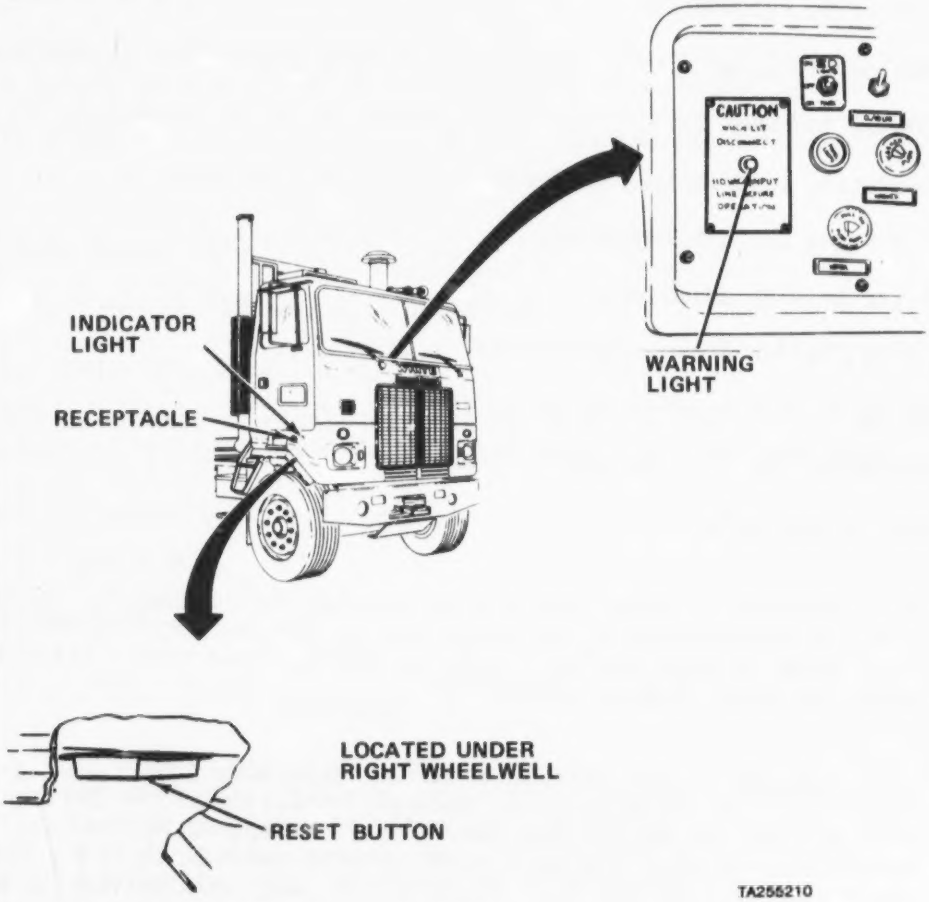
Table 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Cont)

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

ITEM NO.	INTERVAL					ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	W	M		
						TRUCK CHASSIS	
18						HORNS.	
		●				Check operation of horns if tactical situation permits.	
						NOTE Raise cab IAW instruction in paragraph 3-6 for following checks.	
19						COOLING SYSTEM.	
				●		a. Inspect accessory drive belts for tears, breaks, cracks, and obvious looseness. Notify Organizational Maintenance to have loose belts tightened.	Missing or broken belts.
				●		b. Inspect radiator hoses and connectors for damage, deterioration, or leaks. Notify Organizational Maintenance to replace damaged hoses.	Damage or Class III leaks.
20						FUEL FILTER ASSEMBLY.	
				●		Inspect fuel lines, pump, and filter for damage or leaks.	Class III leaks.
						NOTE Lower cab IAW instruction in paragraph 3-6.	

Table 2-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Cont)

B-BEFORE D-DURING A-AFTER W-WEEKLY M-MONTHLY

ITEM NO.	INTERVAL					ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED OR ADJUSTED AS NEEDED	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	W	M		
						TRUCK CHASSIS	
21						ARCTIC WINTERIZATION KIT. (Extreme Cold Weather Operation)	
						 INDICATOR LIGHT RECEPTACLE CAUTION WARNING LIGHT LOCATED UNDER RIGHT WHEELWELL RESET BUTTON TA255210	
	●					a. Disconnect 110 vac power cord.	
			●			b. Connect 110 vac power cord.	
			●			c. Check warning lights on side of cab and on dash in cab.	

Section III. OPERATION UNDER USUAL CONDITIONS

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Operating Instructions on Decals and Instruction Plates 2-19

Tie Downs and Lifting Points. 2-20

Basic Driving Guidelines 2-21

Using Trailer Brake Hand Control 2-22

Using Interaxle Differential Lockup 2-23

Portable Fire Extinguisher 2-24

NATO Slave Receptacle 2-25

2-13. GENERAL. These instructions provide information for vehicle operation under moderate temperature and humidity, and on hard-surfaced roads. For vehicle operations under unusual weather, road, or terrain conditions, refer to Section IV, Operation Under Unusual Conditions.

2-14. ASSEMBLY AND PREPARATION FOR USE. When a new, used, or reconditioned vehicle is first received, it is the responsibility of the Officer-in-Charge to determine whether the vehicle has been properly prepared for service. Organizational Maintenance will provide any additional service required to bring the vehicle to operating standards. The operator should assist with this service to become familiar with operational standards, proper operational procedures, and correct methods to perform operator tests, inspections, and services.

BEFORE YOU OPERATE YOUR TRUCK

- Know the capabilities of your truck. Do not try to make your truck exceed these limitations.
- Know how to use the features of your truck in the safest and most efficient ways to accomplish your mission.
- Know your operator's controls and indicators before starting and driving your truck.

2-15. INITIAL ADJUSTMENTS AND DAILY CHECKS. Before (B) PMCS checks and services are to be conducted before vehicle operation. The operator must adjust mirrors, seats, seat belts, and any supplemental equipment in cab to be sure that all equipment or controls are accessible, vision is not impaired, and the operator can complete the mission.

2-16. OPERATING PROCEDURES

a. Make sure that system PARK valve is pulled out.

b. Place shift lever in neutral (N).

c. Turn master switch key to right, on position. Low air pressure buzzer should sound and following warning/indicator lights should illuminate:

(1) Low oil pressure

(2) Low air pressure

(3) Low range indicator

CAUTION

TO PREVENT DAMAGE TO ELECTRIC STARTER, DO NOT HOLD STARTER BUTTON DEPRESSED FOR MORE THAN 30 SECONDS. IF ENGINE DOES NOT START, WAIT AT LEAST 2 MINUTES UNTIL STARTER MOTOR HAS COOLED. THEN REATTEMPT TO START ENGINE.

d. Depress starter button, release when engine starts.

CAUTION

DO NOT OPERATE ENGINE IF OIL PRESSURE IS NOT INDICATED WITHIN 10 SECONDS. ENGINE COULD BE DAMAGED.

e. Check oil pressure gage. If normal pressure is not indicated after 10 seconds, shut down engine.

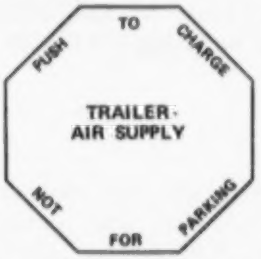
f. Adjust engine speed with hand throttle to 1000 rpm.

g. When engine temperature is 130°F (54.4°C), reduce rpm by hand throttle to 575-650 rpm.

WARNING

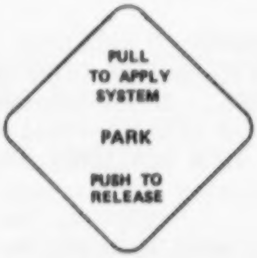
DO NOT OPERATE TRUCK UNTIL LOW AIR PRESSURE WARNING BUZZER IS SILENT AND AIR PRESSURE GAGE INDICATES PRESSURE OF AT LEAST 105 PSI (7.4 KG/CM2). SATISFACTORY BRAKING ACTION DEPENDS UPON THIS PRESSURE.

h. When air pressure gage indicates equal pressure of both needles and at least 105 psi (7.4 kg/cm2), reset low air pressure warning flag. Then set:


PUSH
TO
CHARGE
TRAILER
AIR SUPPLY
NOT
FOR
PARKING

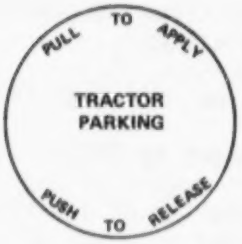
TA255211

(1) TRAILER AIR SUPPLY control (when coupled to trailer). Push in.


PULL
TO APPLY
SYSTEM
PARK
PUSH TO
RELEASE

TA255212

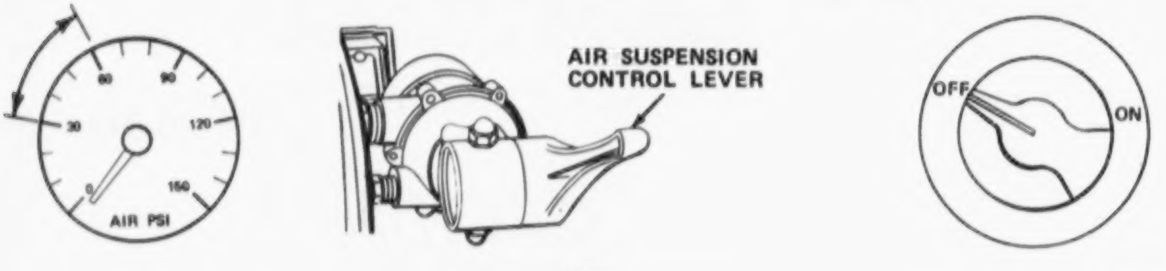
(2) System PARK control. Push in.


PULL TO APPLY
TRACTOR
PARKING
PUSH TO RELEASE

TA255213

(3) TRACTOR PARKING control. Push in.

(4) Air suspension control switch and lever as required.


30
60
90
120
150
0
AIR PSI
AIR SUSPENSION
CONTROL LEVER
OFF
ON

TA255214

NOTE

When Air Suspension Control switch is in the OFF position, and Air Suspension Control Lever is in the Up position, air bags height are automatically set by two rear axle-to-frame height control valves. Should it be required to raise (inflate bags) or lower (deflate bags) the truck load from its normally established height, you can override the automatic height control system by use of the Air Suspension Control Switch and Air Suspension Control Lever.

(a) To Inflate Air Bags:

Place control switch to ON position.

Place control lever to up position.

When desired height is reached, place control switch to OFF position and control lever to down position. System air pressure gage will indicate 0 psi.

(b) To Deflate Air Bags:

Place control switch to ON position.

Place control lever to down position.

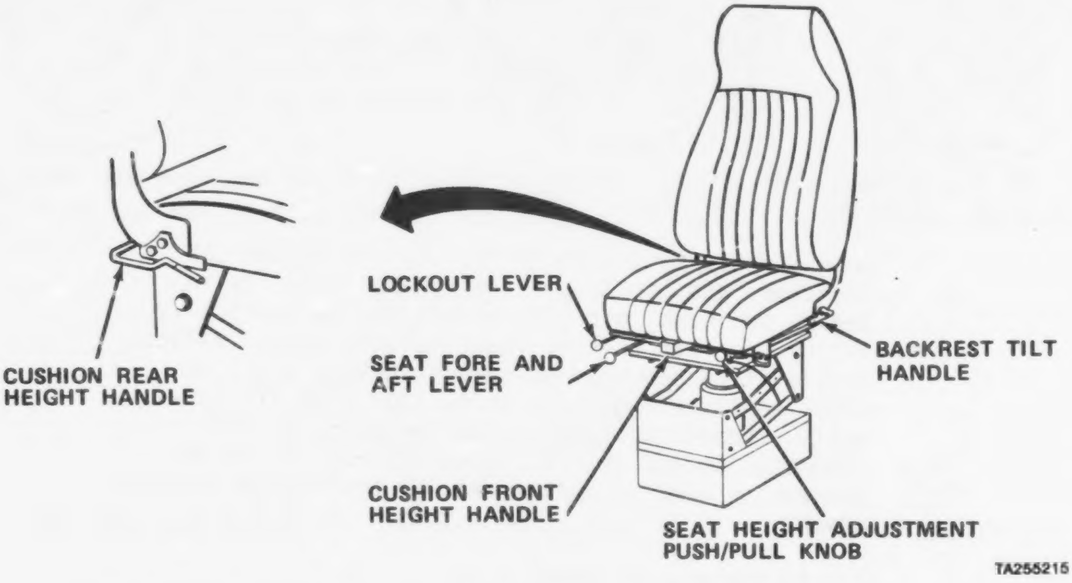
When desired height is reached, place control switch to OFF position. System air pressure gage will indicate 0 psi.

(c) To Re-establish Normal Sir Bags Height:

Place control switch to OFF position.

Place control lever to UP position. Air bags' normal height will now be automatically controlled by height control valves. System air pressure gage will indicate 30-60 psi (2.1-4.2 kg/cm^2).

i. Adjust Driver's Seat


LOCKOUT LEVER
CUSHION REAR HEIGHT HANDLE
SEAT FORE AND AFT LEVER
BACKREST TILT HANDLE
CUSHION FRONT HEIGHT HANDLE
SEAT HEIGHT ADJUSTMENT PUSH/PULL KNOB
TA255215

(1) Backrest adjustment. While seated, pull up on the backrest tilt handle to adjust the backrest for comfort.

(2) Adjust seat height. Pull or push knob until sea is at a comfortable height.

(3) Adjust cushion front height. Lift cushion front height handle and pull up or push down cushion.

(4) Adjust cushion rear height. Lift cushion rear height handle to raise cushion if desired.

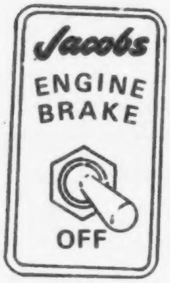
(5) Adjust seat "fore and aft" position. Move lever to right and push seat frontwards or backwards to proper distance.

(6) Adjust lockout lever.

WARNING

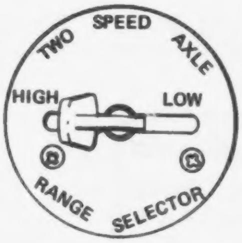
USE OF SEAT BELTS WHILE OPERATING YOUR VEHICLE IS MANDATORY AS AN AID IN PREVENTING PERSONAL INJURY IN THE EVENT OF AN ACCIDENT.

j. Adjust seat belt.



TA255216

k. Set ENGINE BRAKE switch to OFF.



TA255217

l. Set rear axle to high range.

m. Follow tactical doctrine before illuminating exterior lights, and follow directives regarding clearance lights, head, tail, or convoy lighting.

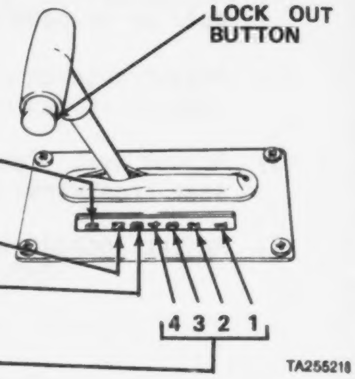
n. Push lockout button in and set transmission selector to proper position.

Reverse. Use to back vehicle. Vehicle must be at complete stop before shifting from forward gear to reverse. Greatest traction in this gear.

Neutral. Vehicle must be started in this gear.

Drive. Used for all normal driving conditions, transmission will up and down shift as required from position 1.

4, 3, 2, 1. These positions limit up-shift to the highest number selected.

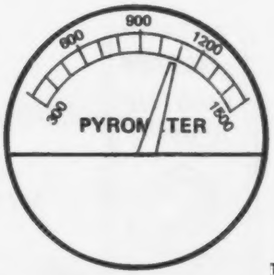


TA255218

o. Advance foot throttle to increase speed.

p. During operation, monitor tachometer to avoid overspeeding engine (Maximum 2100 rpm).

q. Operation of the engine is most effective at about three-quarter throttle. Use care in operating vehicle if full throttle is required.

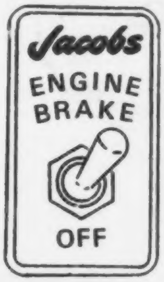


TA255219

r. Observe engine exhaust pyrometer gage.

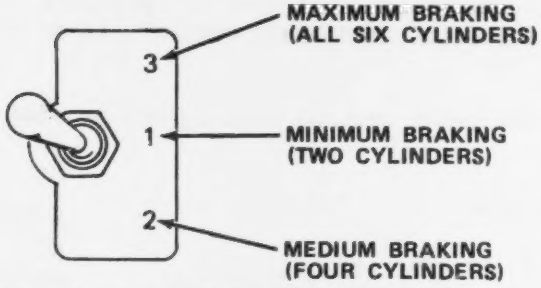
Reduce throttle and/or road speed if exhaust temperature exceeds 1100°F (593°C).

s. Engine brake. When descending grades, in congested areas, approaching known stops, or whenever requirement exists to retard or brake vehicle, engine brake should be used.



TA255220

(1) Turn ENGINE BRAKE switch ON.


MAXIMUM BRAKING
(ALL SIX CYLINDERS)
3
1
MINIMUM BRAKING
(TWO CYLINDERS)
2
MEDIUM BRAKING
(FOUR CYLINDERS)

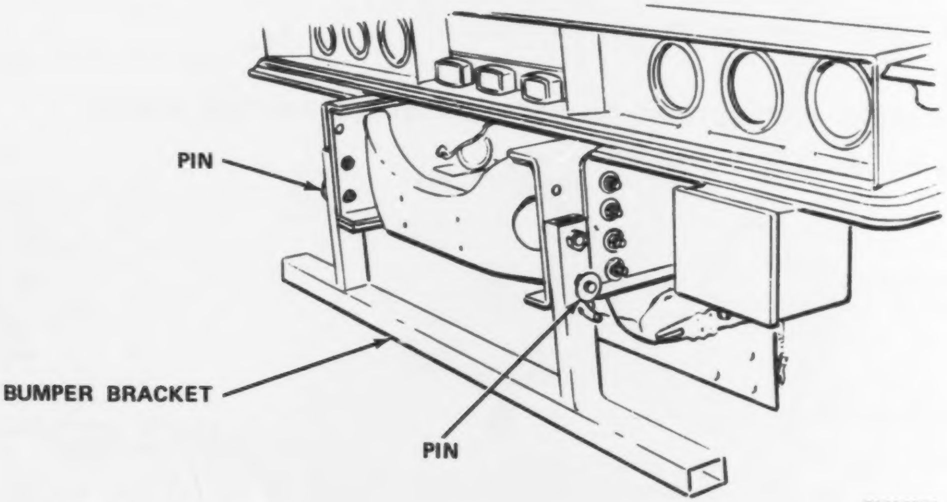
TA255221

(2) Choose position 1, 2, or 3 for engine brake selector switch.

Choose position for maximum, medium, or minimum braking as required by operational conditions.

t. Reduce engine throttle when oil temperature reaches 225°F (107.2°C) or coolant temperature exceeds 195°F (90.6°C). If road conditions permit, operate at partial throttle to conserve fuel and extend engine life.

2-17. TOWING A TRAILER. The Truck, ISO Container Transporter, is capable of towing a trailer on primary and secondary roads. The following specific actions unique to this vehicle must be accomplished before towing:


PIN
BUMPER BRACKET
PIN

TA255222

a. Pull two pins from frame bracket.

b. Swing bumper bracket up.

c. Secure bumper bracket with pins.

d. Attach pintle to lunette.

e. Attach 12 V or 24 V connectors.

f. Test turn, brake, and rear lights for proper functioning.

g. After starting engine, and when air pressure is at least 105 psi (7.4 kg/cm^2), test hand brake controls to be sure trailer air brakes operate.

h. Test trailer brake control knob before driving vehicle.

2-18. ENGINE SHUTDOWN

CAUTION

DO NOT SHUT ENGINE OFF FROM HIGH LOAD OR RPM UNTIL ENGINE HAS IDLED FOR THREE TO FIVE MINUTES TO PREVENT DAMAGE TO TURBOCHARGER.

DO NOT SECURE ENGINE UNTIL ALL AIR RESERVOIRS ARE AT FULL CAPACITY.

a. Idle engine for three to five minutes.

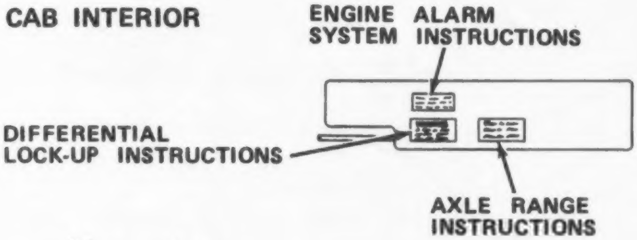
b. Set system PARK control valve. Pull out.

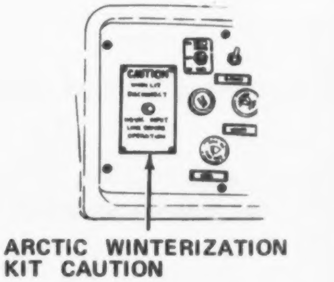
c. Transmission selector in neutral.

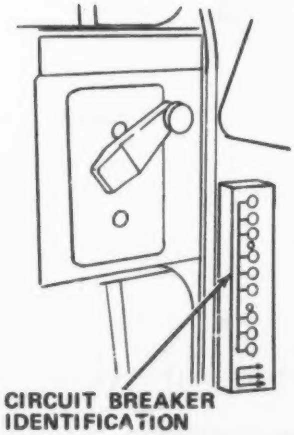
d. Turn switch key to off position.

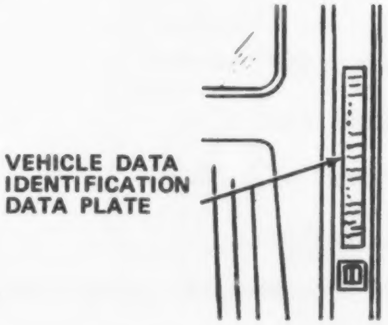
2-19. OPERATING INSTRUCTIONS ON DECALS AND INSTRUCTION PLATES

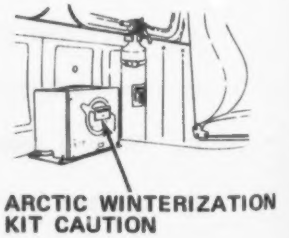
A. CAB INTERIOR


ENGINE ALARM SYSTEM INSTRUCTIONS
DIFFERENTIAL LOCK-UP INSTRUCTIONS
AXLE RANGE INSTRUCTIONS


ARCTIC WINTERIZATION KIT CAUTION

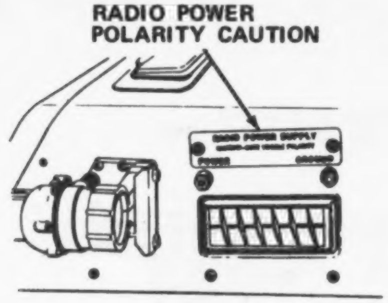

CIRCUIT BREAKER IDENTIFICATION

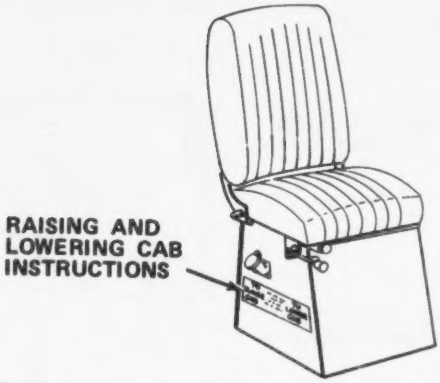

VEHICLE DATA IDENTIFICATION DATA PLATE


ARCTIC WINTERIZATION KIT CAUTION

TA255220

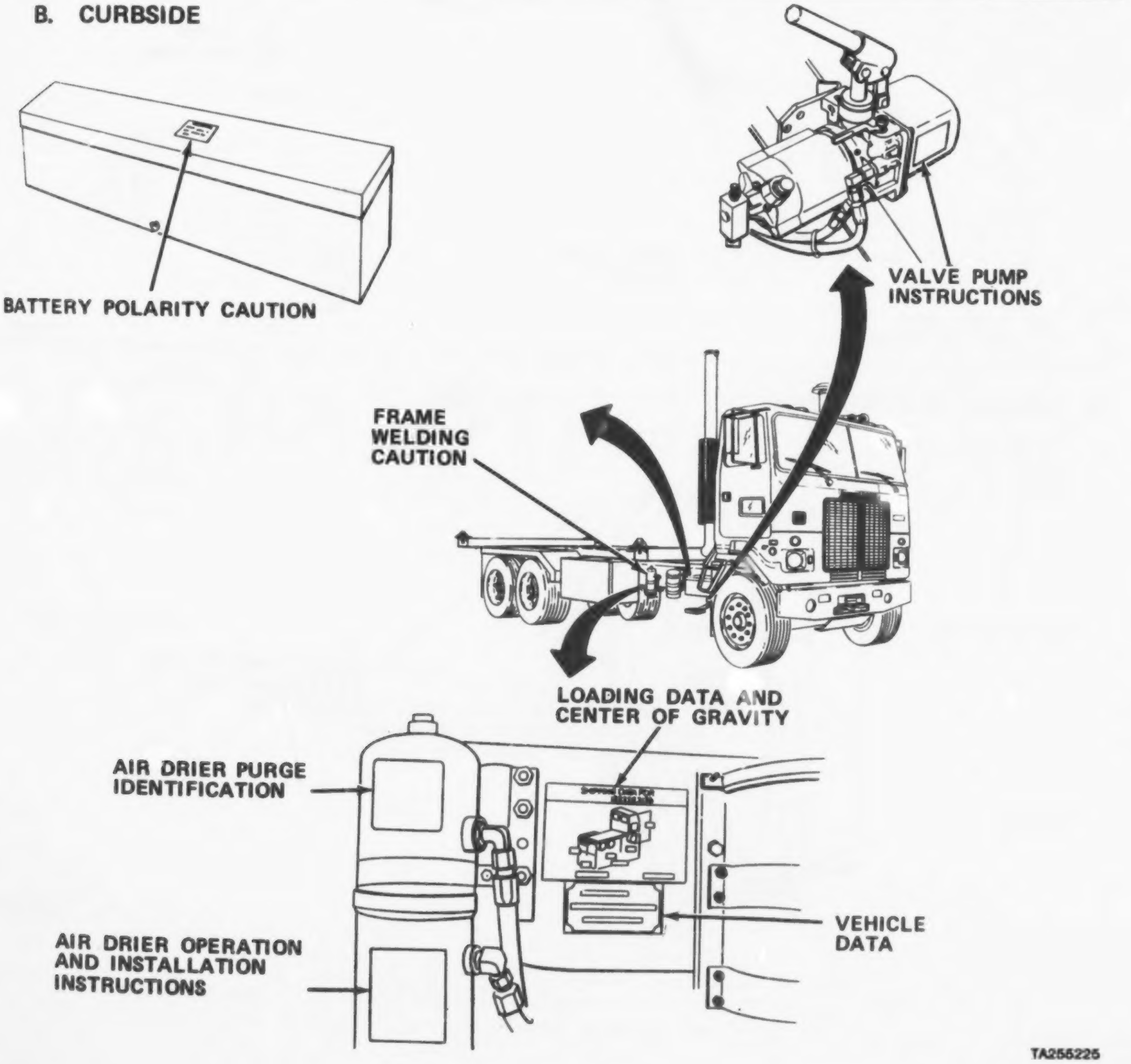
A. CAB INTERIOR (Cont)


RADIO POWER
POLARITY CAUTION


RAISING AND
LOWERING CAB
INSTRUCTIONS

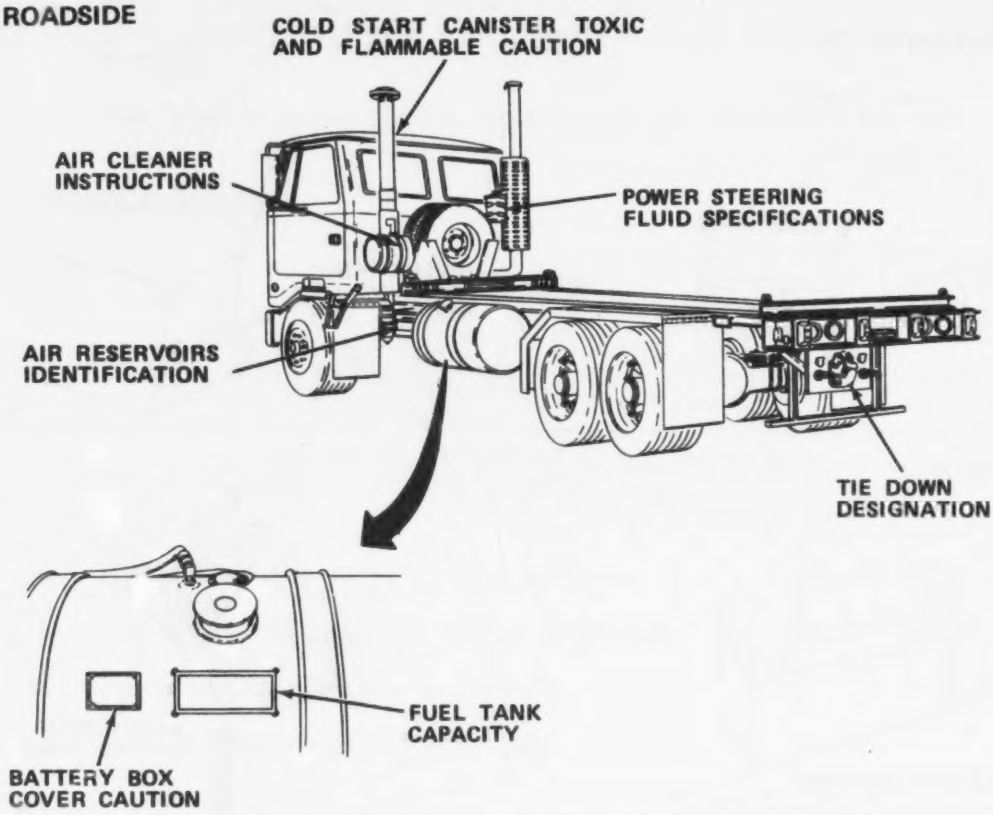
TA255224

B. CURBSIDE

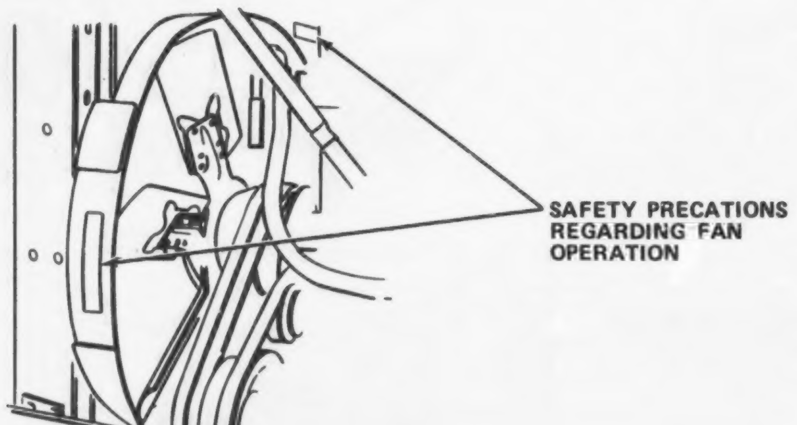

BATTERY POLARITY CAUTION
VALVE PUMP
INSTRUCTIONS
FRAME
WELDING
CAUTION
LOADING DATA AND
CENTER OF GRAVITY
AIR DRIER PURGE
IDENTIFICATION
VEHICLE
DATA
AIR DRIER OPERATION
AND INSTALLATION
INSTRUCTIONS

TA255225

C. ROADSIDE

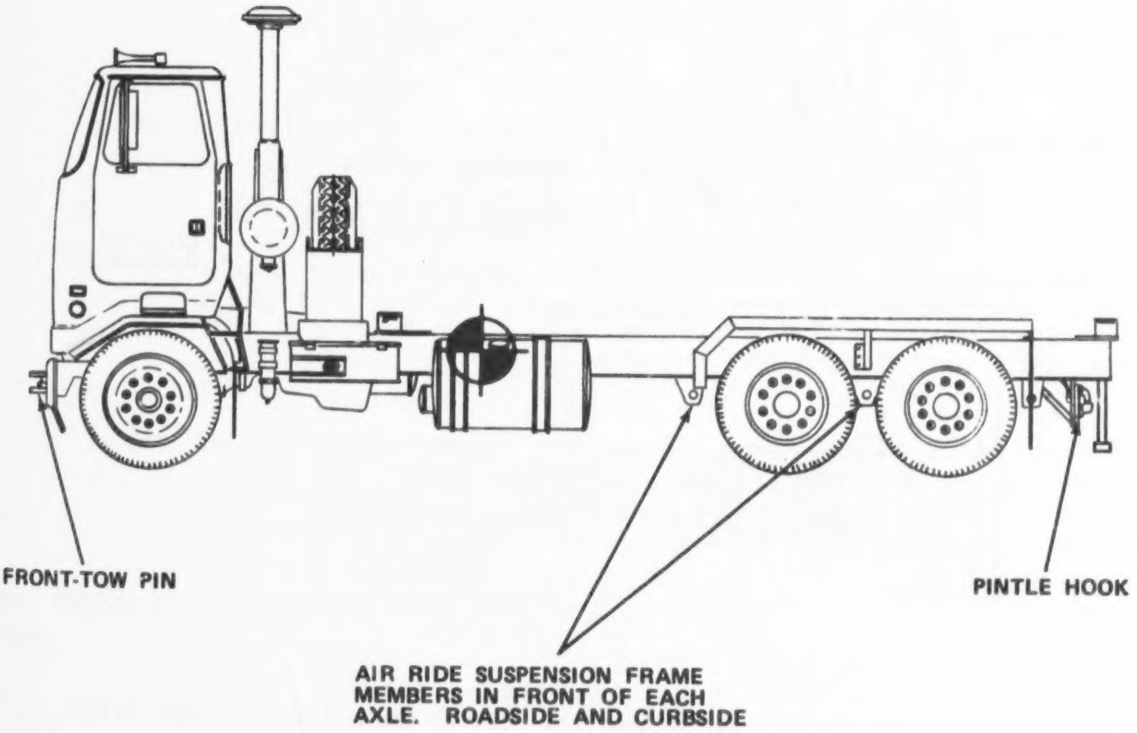

COLD START CANISTER TOXIC AND FLAMMABLE CAUTION
AIR CLEANER INSTRUCTIONS
POWER STEERING FLUID SPECIFICATIONS
AIR RESERVOIRS IDENTIFICATION
TIE DOWN DESIGNATION
FUEL TANK CAPACITY
BATTERY BOX COVER CAUTION
TA255226

D. ENGINE COMPARTMENT


SAFETY PRECATIONS REGARDING FAN OPERATION
TA255227

2-20. TIE DOWNS AND LIFTING POINTS

a. Tie Downs.


FRONT-TOW PIN
PINTLE HOOK
AIR RIDE SUSPENSION FRAME MEMBERS IN FRONT OF EACH AXLE. ROADSIDE AND CURBSIDE

TA255226

(1) Before securing tie-down devices, deplete all air from air suspension system.

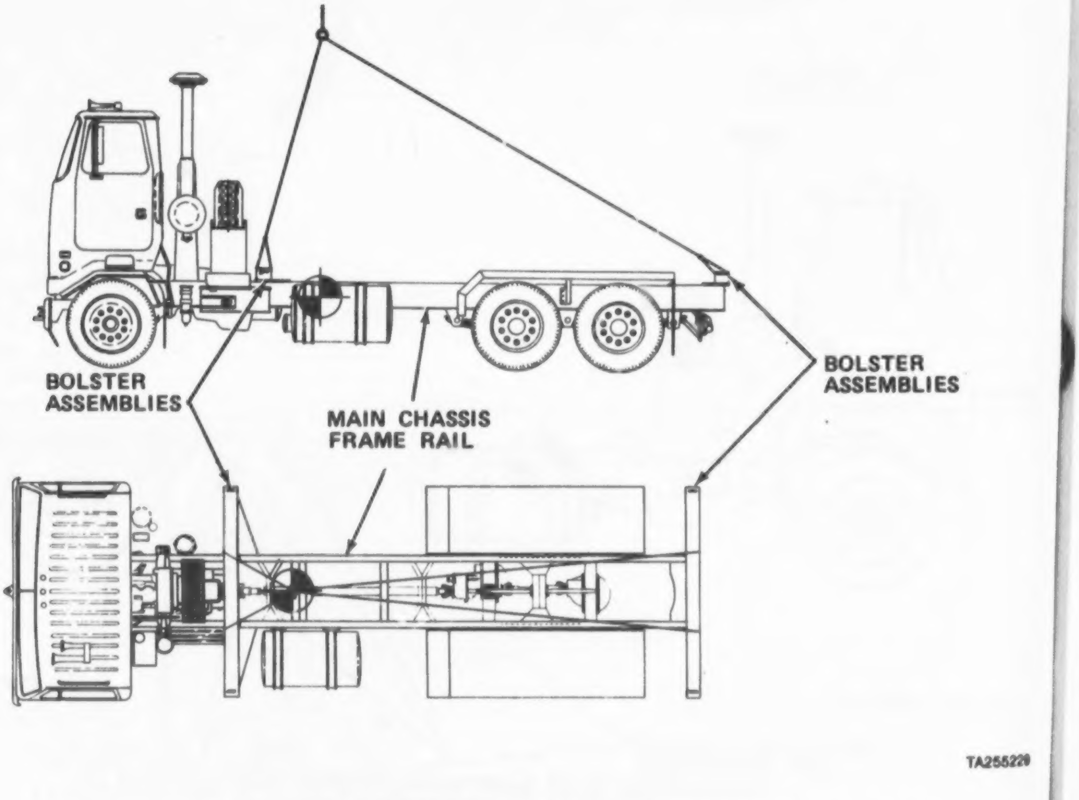
(2) Attach tie-down devices to the following points:

Front: Tow pin.

Rear: Pintle hook.

Roadside/Curbside: Around air ride suspension frame members in front of each rear axle.

b. Lifting Points.



Attach to bolster assemblies next to main chassis frame rails.

2-21. BASIC DRIVING GUIDELINES

a. Avoid Unnecessary Engine Idling. During long engine idling periods, the engine coolant temperature will fall below the normal operating range. The incomplete combustion of fuel in a cold engine will cause crankcase dilution, formation of lacquer or gummy deposits on the valves, pistons, and rings and rapid accumulation of sludge in the engine. When prolonged engine idling is absolutely necessary, maintain at least 800 rpm.

b. Frequently Check Gages and Indicators. If the gages or indicators show any abnormal conditions, bring the truck to a safe stop, shut down the engine, and investigate the cause of the trouble.

c. Optimum Use of Engine RPM. It is not necessary to operate the engine at maximum rpm in order to get good performance. The engine will perform efficiently at the low and middle speed ranges and offer a definite fuel advantage at these reduced speeds. Control rpm by tailoring engine speed to the load requirements and the road speed desired.

d. Avoid Oversteering.

CAUTION

STEERING WHEEL SHOULD NOT BE HELD AT FULL STEER FOR MORE THAN 10 SECONDS. FLUID OVERHEATING, LOSS OF FLUID FROM POWER STEERING RESERVOIR, AND PUMP GEAR DAMAGE CAN RESULT.

Become familiar with the steering characteristics of the truck before attempting maneuvers in limited space.

e. Drive Efficiently and Economically.

(1) When driving conditions permit, maintain the legal highway speed in a gear that permits running the engine below governed speed (preferably 25 percent below governed speed). This is the engine's cruising range and it affords better fuel economy than higher engine speeds.

(2) There are times when hilly terrain, high winds, or other conditions make it impractical to operate without reserve power. Such conditions are better met if the truck is operated in a lower gear range with reserve power available for changes in terrain, wind, etc.

2-22. USING TRAILER BRAKE HAND CONTROL

CAUTION

AFTER USE, ALWAYS RETURN TRAILER BRAKE HAND CONTROL TO ITS OFF POSITION (ALL THE WAY UP), OR TRAILER BRAKES WILL BURN UP.

Use the trailer brake hand control to help avoid jackknifing. This control will apply the trailer brakes only. To apply the trailer brakes, pull down on the control. Be sure to return the control to its off position (all the way up) when you have finished using it.

2-23. USING INTERAXLE DIFFERENTIAL LOCKUP

CAUTION

DO NOT OPERATE TRUCK ON HARD SURFACES ANY LONGER THAN NECESSARY WITH DIFFERENTIAL LOCKUP ENGAGED. OTHERWISE, DRIVELINE WIND-UP CAN OCCUR WHICH CAN DAMAGE DIFFERENTIAL.

Interaxle differential lockup provides additional traction by applying full torque to both rear axles. This feature should be used any time tractive conditions are poor, e.g., rainy or icy pavement.

The differential lock/unlock control is located on the instrument panel to the right of the driver. Use the following instructions to engage and disengage the system:

a. Engage

(1) Pull to side of road and stop truck.

(2) Place differential lock/unlock control in LOCK position.

(3) Observe that differential lockup indicator light comes on. Truck is now ready for operation.

b. Disengage

(1) Remove your foot from accelerator pedal.

(2) Place differential lock/unlock control in UNLOCK position.

CAUTION

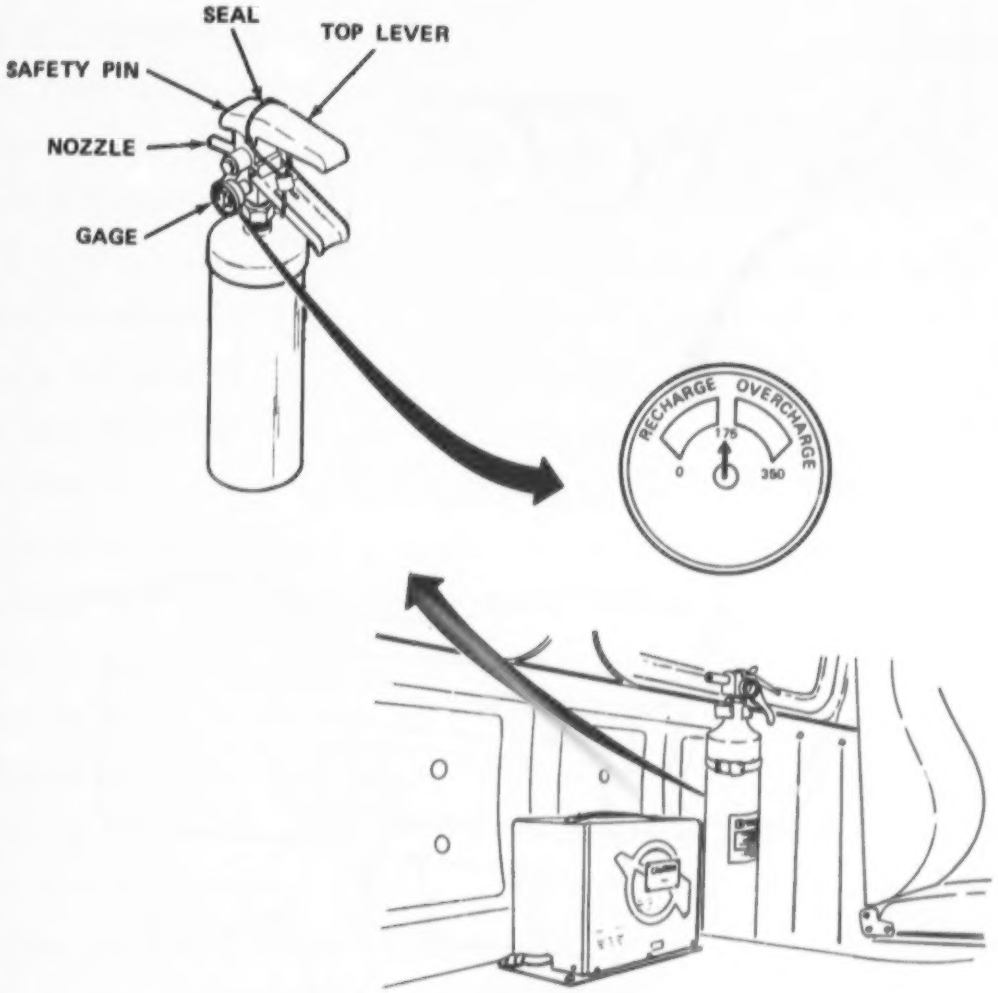
DO NOT OPERATE TRUCK IF INDICATOR LIGHT STAYS ON.

(3) Observe that differential lockup indicator light goes off. If differential lockup indicator light does not go off, it may be necessary to back up slowly, go forward again, and repeat several times until light goes off.

(4) If light will not go off, do not operate truck.

2-24. PORTABLE FIRE EXTINGUISHER

TO OPERATE


SEAL
TOP LEVER
SAFETY PIN
NOZZLE
GAGE
RECHARGE
OVERCHARGE
175
0
350

TA256230

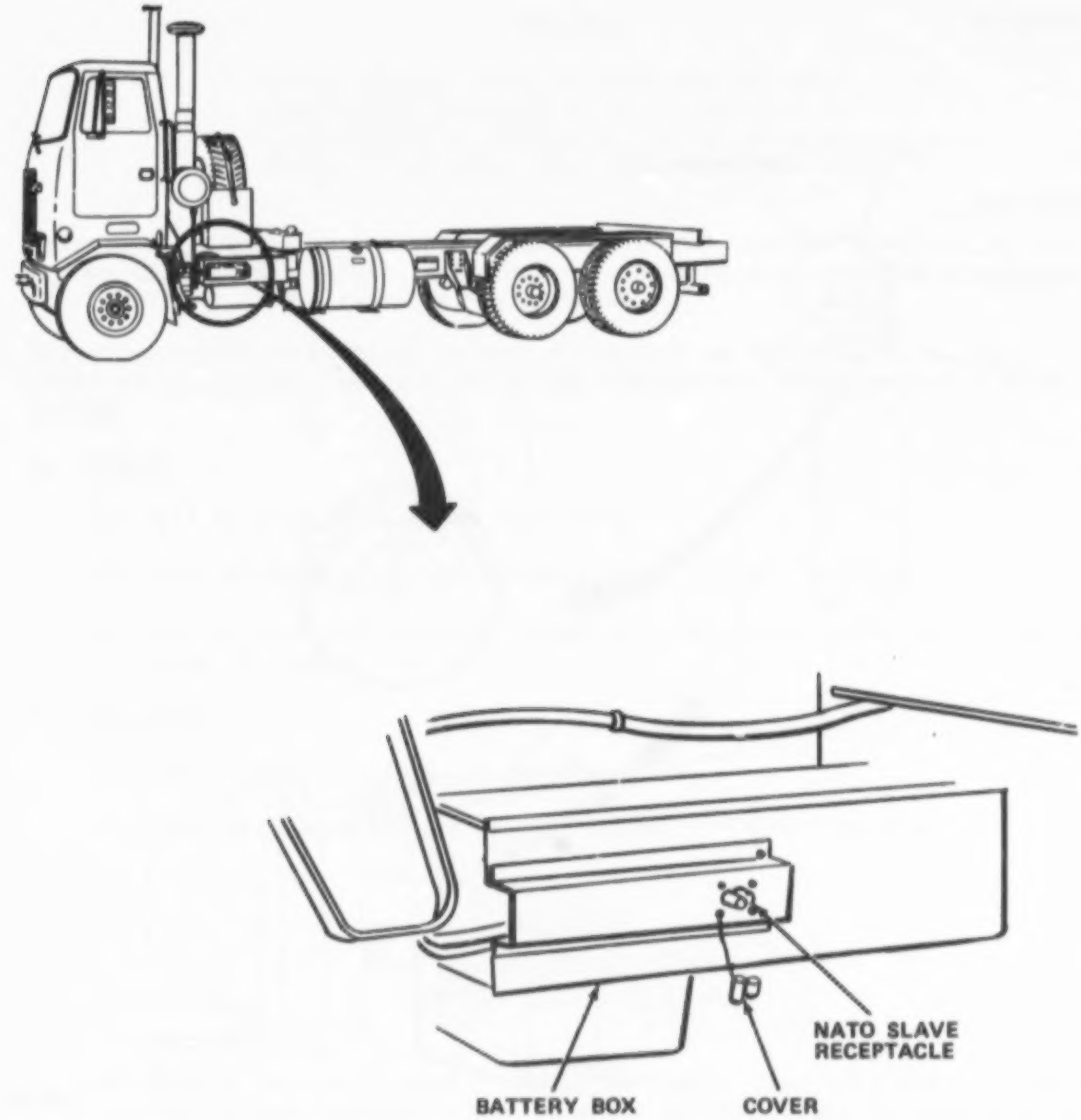
a. Remove fire extinguisher from the bracket located on back wall of cab between the seats.

b. Hold fire extinguisher upright. Point nozzle toward base of fire and pull safety pin.

c. Press top lever. Discharge chemical at base of fire; move nozzle from side to side.

d. After you have used the fire extinguisher, notify Organizational Maintenance that you need a replacement for the used extinguisher.

2-25. NATO SLAVE RECEPTACLE


NATO SLAVE RECEPTACLE
BATTERY BOX
COVER

TA256231

The NATO slave receptacle is mounted on the left battery box. This receptacle is used as a cable connection for jump starting your truck chassis or another truck from your truck chassis.

Section IV. OPERATION UNDER UNUSUAL CONDITIONS

INDEX

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2-26. SPECIAL INSTRUCTIONS. Special instructions for operating this vehicle under unusual conditions are included in this section. Special care in cleaning and lubrication must be observed when extremes of temperature, humidity, or terrain are encountered or expected. Special care, in addition to normal preventive maintenance checks and services, ensures proper vehicle operation and functioning. Special care also ensures against excessive vehicle wear and deterioration. See FM 21-305 for special operating instructions for vehicles.

2-27. LUBRICATION. See LO 9-2320-281-12 for proper lubricants, lubricating instructions, and service intervals for normal operation. Conditions of extreme cold, prolonged travel, immersion in fresh or salt water, operating in sand, dust, mud, or extended exposure to moisture will quickly destroy lubricant films and require frequent servicing to prevent vehicle malfunction or damage.

2-28. USE OF LOW RANGE AXLE.

CAUTION

SHIFTING REAR AXLE SHALL BE ACCOMPLISHED WHEN VEHICLE IS STOPPED. SET SYSTEM PARK CONTROL TO SHIFT TO EITHER LOW OR HIGH AXLE RANGE.

The low range axle is used when conditions require high torque or force at the driving wheels. Examples of this are when moving up a grade, or moving in sand, mud, or snow.

2-29. USE OF DIFFERENTIAL LOCKOUT

WARNING

EXCESSIVE OR IMPROPER USE OF DIFFERENTIAL LOCKOUT WILL RESULT IN INJURY TO PERSONNEL, POOR HANDLING, OR DANGEROUS CONDITIONS.

CAUTION

DO NOT USE DIFFERENTIAL LOCKOUT WHEN ROAD SPEED EXCEEDS 10 MPH OR ON HARD-SURFACED, GOOD TRACTION ROADS.

In deep mud, sand, snow, or on ice, when one set of driving wheels starts to spin without moving the driving wheels on the other side, the differential lockout should be engaged.

2-30. ROCKING OUT. If the vehicle is stuck in deep sand, snow, mud, etc, it may be possible to rock the vehicle out. Set the throttle to 800-900 rpm (never full throttle), set differential lockout to engage, low range axle selector to low, and move the transmission selector between 1st and reverse. Build up momentum in each direction until the vehicle is free.

ALL DATA ON PAGE 2-57 DELETED

2-31. FORDING AND SWIMMING

a. BEFORE FORDING. Before you attempt fording, check the bottom surface conditions. Make sure the bottom surface is hard enough that you can ford without exceeding maximum fording depth of 30 in. (0.8 m). If the bottom surface is too soft, do not attempt fording. Ford to the maximum depth for short periods or short distances only.

(1) Make sure engine is operating properly before entering water.

(2) Lubricate unpainted surfaces to guard against rust and deterioration.

(3) Engage driveline locking system. Move differential lock/unlock control to LOCK position.

b. DURING FORDING.

(1) Put transmission in a low gear range. Enter water slowly.

(2) Ford at speeds of three to four mph (4.8 to 6.4 kph).

(3) When your truck emerges from water, apply brakes a few times while moving to help dry out brake linings. Make sure brakes are working properly before driving truck at normal speeds.

c. AFTER FORDING.

During fording, water may enter your truck or its components. This water may have contaminated the fluid systems. You must make sure that any accumulated water is removed from your truck before it has a chance to cause damage to any systems, surfaces, or equipment of the truck. As soon as possible after fording, check you truck using the following guidelines:

(1) Let engine run for awhile to drive out any accumulated water.

(2) Drain or dry any areas on your truck where water has accumulated. Remove any mud or sand.

(3) Check each fluid system in your truck for evidence of water contamination. If you find water in one or more fluid systems, notify Organizational Maintenance to drain, flush, and decontaminate system before refilling.

(4) Refer to LO 9-2320-281-12. Notify Organizational Maintenance that an after-fording lubrication is needed.

(5) If necessary, notify Organizational Maintenance of any service or repairs your truck needs before you return it to normal use.

(6) If your truck has been operated in salt water, rinse the truck with fresh water if a supply is available, and let the exterior dry. Then check it for evidence of salt accumulation. Use clean, damp cloth to immediately remove all salt accumulation. Notify Organizational Maintenance.

2-32. EMERGENCY PROCEDURES. Refer to FM 3-87 and FM 21-40 for Nuclear, Biological, and Chemical (NBC) decontamination procedures.

2-33. OPERATION IN EXTREME COLD

a. GENERAL. The operator must always be alert for indications of extreme cold and complete precautions for vehicle operation before extreme cold causes malfunctions. The operator should use caution when starting or driving a vehicle after a lengthy shutdown. Thickened lubricants may cause part failure, tires may freeze to the ground, mechanical linkages may be inoperative, and excessive ice may block automatic protection features.

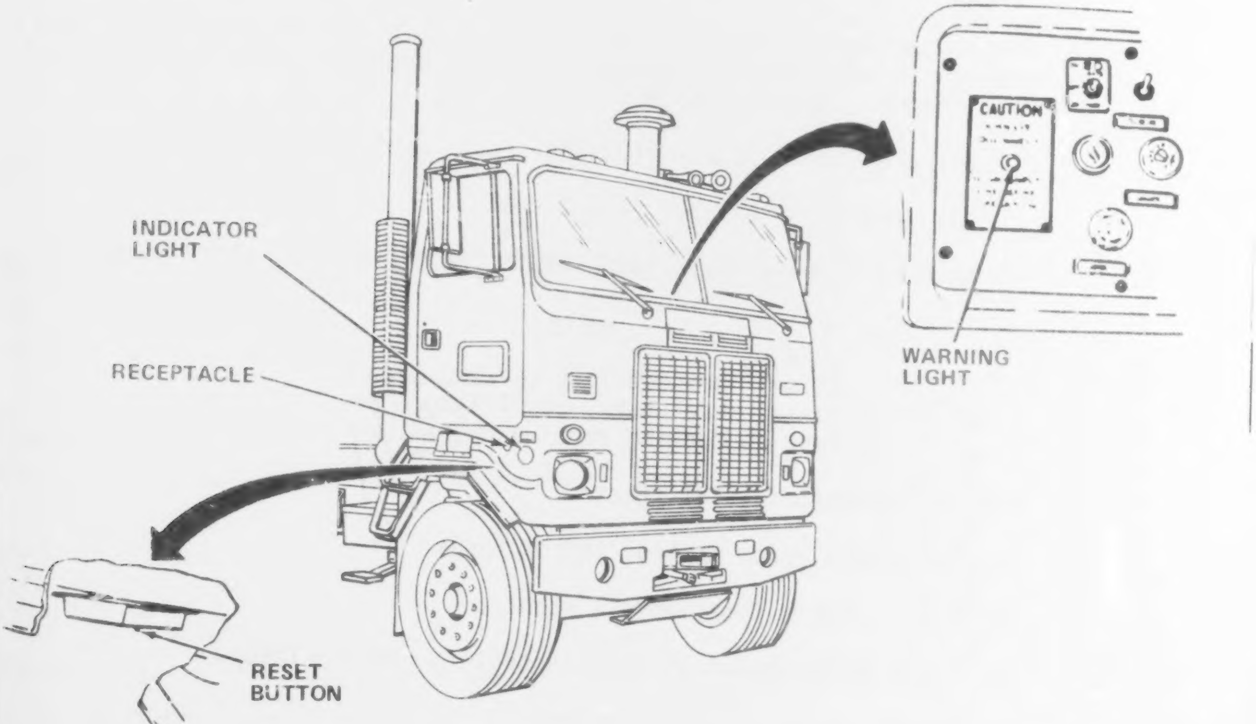
b. BEFORE OPERATION

(1) Perform before operation services.

(2) Be sure engine coolant is sufficient for temperatures of -20°F to -65°F (-28.9°C to -53.9°C).

(3) When Arctic Winterization Kit cannot be used because 110 V, 50-60 Hz power is not available, proper weight oil, full quick-start canisters, and warm, full-capacity batteries are required to start engine.

(4) Use Arctic Winterization Kit at all times power is available.



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(a) Plug connector or extension cord into receptacle.

(b) Be sure indicator light is on. If light does not go on, set circuit breaker by pushing reset button.

(c) Be sure warning light on dashboard is on.

NOTE

Battery heaters and engine heaters will be on all the time the Arctic Winterization Kit is plugged into power source. When kit is operating, the engine block and battery cases will be warm to the touch.

CAUTION

TO PREVENT DAMAGE TO THE ENGINE OR ELECTRICAL SYSTEM, UNPLUG THE ARCTIC WINTERIZATION KIT BEFORE STARTING ENGINE OR MOVING TRUCK CHASSIS.

(5) Unplug Arctic Winterization Kit before starting engine or moving truck chassis.

(6) After starting, check instrument readings. If any reading is not normal, stop engine and determine cause(s). Report condition to Organizational Maintenance. Normal readings are:

Oil pressure: 15 psi (103 kPa) after warmup at idle.

Air pressure: 105 psi (7.4 kg/cm^2).

Coolant temperature: 165°F-195°F (73.9°C-90.6°C) after warmup.

NOTE

It will be necessary to warm gear cases, wheel hubs, and linkages before conducting routine operations.

(7) Driving vehicle, initial start:

(a) Place axle range control in LOW range.

(b) Remove chocks from vehicle wheels.

(c) Place differential lockout control to LOCK position.

(d) Place transmission in 1st gear.

(e) Drive slowly for about 100 yards.

(8) Driving vehicle:

(a) Place differential lockout to UNLOCK and axle in HIGH range.

(b) Place transmission selector in desired range.

(c) Drive normally, constantly checking instruments. Oil consumption will be high. Operator must be also alert to sudden loss of air pressure.

(9) Halting or parking:

(a) Do not idle engine for more than 15 minutes at a time.

(b) Drain water from compressed air supply tanks manually after about eight hours of continuous operation, in addition to the PMCS requirements.

(c) Check fluid level of alcohol evaporator at every stop.

(d) When halted for short shutdown periods, attempt to park in a sheltered area. If shelter is not available, park so that vehicle does not face wind, and snow is not blown into engine.

(e) Do not set brakes when parked. Check vehicle wheels to prevent movement.

(f) At end of day's operations and after completion of checks and services, plug in the Arctic Winterization Kit to 110 vac power source or have batteries removed to a warm place if power is not available.

2-34. OPERATION IN EXTREME HEAT

a. GENERAL

(1) Pay particular attention to avoid overheating of engine. Halt vehicle to cool off engine when necessary, if tactical situation permits.

(2) Avoid continuous operation at high speed or long, hard pulls in low range or off-road conditions.

WARNING

TO PREVENT BURNS OR SERIOUS INJURY, USE EXTREME CARE WHEN REMOVING RADIATOR FILL CAP IF TEMPERATURE GAGE READS OVER 195°F (90.6°C).

CAUTION

TO PREVENT ENGINE DAMAGE, DO NOT ADD COOLANT TO HOT ENGINE UNLESS ENGINE IS RUNNING.

(3) Check coolant level at frequent intervals. Add coolant as required.

(4) Check the cooling system, air cleaner, engine oil level, and radiator fins frequently. Perform necessary services and notify Organizational Maintenance of any unusual gage readings or other problems.

b. HALTING OR PARKING

(1) When practical, park vehicle under cover to protect it from sun, dust, or sand. Extreme heat and sunlight will shorten life of tires, canvas, seals, and batteries.

(2) Adjust tire pressure as required.

NOTE

Tire pressures read higher when tires are hot.

(3) Check batteries frequently and keep cells topped off with clean, colorless drinkable water.

2-35. OPERATION IN DUSTY OR SANDY AREAS

a. GENERAL. Sand or dust require that frequent servicing of air intake, fuel, lubricating and cooling systems be conducted to remove abrasive particles or prevent clogging of air or fluid passages. Be sure all protective covers are removed before vehicle is driven.

b. DRIVING VEHICLE. In sand or on soft ground use low range, lowest gear consistent with tactical situation, and lockout differential.

c. PARKING

(1) Cover vehicle if no suitable shelter exists. When entire vehicle cannot be covered, protect glass from etching. Protect air, fuel or lubrication oil fill/drains by covering or wrapping with cloths.

(2) Use extreme caution when refueling or adding oil to prevent sand or grit from entering fuel or lubrication systems.

2-36. OPERATION UNDER RAINY OR HUMID CONDITIONS

a. Materials are subject to rapid rusting, growth of fungi, or rot. Frequent cleaning, wiping, and lubrication are required to protect equipment.

b. Frequent service of fuel filter assembly is required. The bowl should be inspected at each stop and the petcock opened to drain water from the fuel bowl at every opportunity.

2-37. OPERATION IN SALT OR BRACKISH WATER AREAS. If the vehicle is flushed with fresh water at the first opportunity, immersion of the vehicle up to 30 in. (0.76 m) in brackish or salt water will not cause significant material problems. All mud and dirt must be regularly cleaned from vehicle with particular care directed to fender wells and underside of the vehicle. Aluminum castings or machinery must be kept clean at all times.

2-38. OPERATION IN SNOW OR MUD

a. GENERAL. Operation in snow or mud requires the use of tire chains on driving wheels.

CAUTION

ATTEMPTS TO OPERATE VEHICLE WITH
TIRE CHAINS ON ONLY ONE DRIVING WHEEL
MAY DAMAGE TIRE, DRIVE TRAIN, OR AXLE.

b. DRIVING VEHICLE. Use caution in operation so as not to exceed prudent speed. Rely on engine and limiting gear ratio to assist in braking.

c. AFTER OPERATION. Remove all snow, ice, mud, or slush from vehicle, paying particular attention to the underside of vehicle.

2-39. OPERATION IN SALT AIR OR SEA SPRAY. The vehicle must be washed with fresh water as often as practical. Mud and dirt must be regularly cleaned from the vehicle. Unpainted metal surfaces should be dried then wiped with an oily rag to leave a protective film after each washing. Chips or gouges in painted metal surfaces must be cleaned and primed to prevent rusting or oxidation.

2-40. HIGH ALTITUDE OPERATION. Preparations for use of the Arctic Winterization Kit and operation in extreme cold should be reviewed. At altitudes above 6,000 ft. (1829 m) a power loss of 10 to 25 percent can be expected with slower acceleration, reduced ability to climb grades, lower maximum speed, and smoky exhaust. Fuel injectors will fail frequently and the using organization should prepare for replacement of injectors, reduced loads, and longer transit times for any given distance.

2-41. EMERGENCY OPERATION. In emergency operation, the number of crew members with the truck chassis should be kept to aminimum and load reduced to minimize the danger to personnel and damage to equipment that could be expected.

CHAPTER 3

MAINTENANCE INSTRUCTIONS

Section I. LUBRICATION INSTRUCTIONS

3-1. GENERAL INFORMATION

a. Operator maintenance is necessary to maintain reliable and effective operation of this vehicle. Operator maintenance is not difficult or complex. It is primarily concerned with careful and intelligent monitoring of operating systems. Maintenance of proper fluid levels and care in the operation of the vehicle will prevent many malfunctions.

b. Accurate and timely log entries will aid maintenance personnel to rapidly isolate problems and correct malfunctions. Keep accurate records to help maintain your truck chassis in good condition.

3-2. GENERAL LUBRICATION INSTRUCTIONS UNDER USUAL CONDITIONS

a. GENERAL. LO 9-2320-281-12 designates cleaning and lubrication procedures, including locations, intervals, and proper materials. This document is issued with each truck and must be carried in the truck at all times. If no lubrication order is available, using organization shall requisition a replacement lubrication order.

b. SERVICE INTERVALS. Service intervals on lubrication order are for normal operation, in moderate temperatures, humidity, and conditions.

c. APPLICATION POINTS. Before applying lubricant, oils, grease, or opening any fitting; wipe fittings, threaded plugs, cups, holes, oilers, and surrounding surfaces clean. Protect fitting from dirt, grit, dust, or moisture during lubrication. Remove any surplus lubricant from adjacent surfaces, and be sure that all plugs, cups, and covers are securely replaced when lubrication is completed.

d. RECORDS AND REPORTS

(1) Report unsatisfactory performance of recommended fuels, lubricants, or preserving materials using DA Form 2407, Maintenance Report. (See TM 38-750.)

(2) Maintain vehicle lubrication record on DA Form 2408-1 in equipment log book.

3-3. GENERAL LUBRICATION INSTRUCTIONS UNDER UNUSUAL CONDITIONS

a. SERVICE INTERVALS. Reduce intervals specified on LO 9-2320-281-12 when operating under unusual conditions such as:

(1) Extremely high or low temperatures.

(2) Prolonged high speed.

(3) Extended heavy load conditions.

(4) Dusty or sandy areas.

(5) Immersion in water.

(6) High moisture conditions.

These conditions can contaminate lubricants or destroy lubricant films. During inactive period with adequate protection, service intervals may be extended.

b. CHANGING LUBRICANT GRADE. Lubricants are specified for the following projected temperature ranges and specific temperatures: Above 32°F (above 0°C), 40°F to -10°F (5°C to -23°C), and 0°F to - 65°F (-18°C to -54°C). For operation in protracted cold temperatures below -10°F (-23°C), remove lubricants prescribed for temperatures above -10°F (-23°C). Clean parts with dry cleaning solvent and relubricate as specified for temperatures 0°F to -65°F (-18°C to -54°C).

c. MAINTAINING LUBRICANT LEVELS. Lubricant levels must be checked and steps taken to replenish lubricant at a frequent basis to be sure that levels remain within the minimum to maximum range.

Section II. TROUBLESHOOTING PROCEDURES

3-4. TROUBLESHOOTING PROCEDURES

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a. Table 3-1 provides the color-coding of unions and fittings. Malfunctions may often be corrected after an inspection, or tracing a system to discover the cause of a problem, then tightening connections.

Table 3-1. COLOR-CODING OF UNIONS AND FITTINGS

SYSTEM	COLOR AT DISCONNECT OR UNION
Lubrication oil	Yellow
Fuel	Red
Coolant (Engine)	Blue
Transission Fluid	Brown
Power Steering	Yellow with blue stripe
Air Line	Orange

b. Table 3-2 lists the common malfunctions which you may find during the operation or maintenance of the Truck Chassis for Direct Support Section, Topographic Support System (TSS). You should perform the tests/inspections and corrective actions in the order listed.

c. THIS MANUAL CANNOT LIST ALL THE POSSIBLE MALFUNCTIONS OR EVERY POSSIBLE TEST/INSPECTION AND CORRECTIVE ACTION. IF A MALFUNCTION IS NOT LISTED OR CORRECTED BY A LISTED CORRECTIVE ACTION, NOTIFY YOUR SUPERVISOR.

Table 3-2. TROUBLESHOOTING

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

NOTE

Be sure you complete all applicable operating checks before you use this table.

ENGINE

1. ENGINE FAILS TO CRANK OR CRANKS TOO SLOWLY TO START.

Step 1. Be sure key switch is on.

Turn switch on.

Step 2. Be sure transmission selector is in N (neutral) position.

Place selector in N position.

WARNING

DO NOT GET BATTERY ELECTROLYTE ON YOUR SKIN, CLOTHING OR IN YOUR EYES. IT IS AN ACID WHICH CAN CAUSE INJURY. KEEP ALL SPARKS AND FLAMES AWAY FROM BATTERIES. THE BATTERY GAS IS EXPLOSIVE.

Step 3. Be sure battery cables in both battery boxes are not loose, broken, or corroded and that all four batteries are filled to proper water level.

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Table 3-2. TROUBLESHOOTING (Cont)

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

---

1. ENGINE FAILS TO CRANK OR CRANKS TOO SLOWLY TO START. (Cont)

Step 3. (Cont)

Check cables, terminals and add clean, colorless, drinkable water as required.

Step 4. Other causes.

Refer to Organizational Maintenance.

2. ENGINE CRANKS BUT DOES NOT START.

Step 1. Check fuel gage indicator.

WARNING

WHEN FILLING FUEL TANK WITH DIESEL FUEL, BE SURE HOSE NOZZLE ON CONTAINER CONTACTS FILLER TUBE ON FUEL TANK TO CARRY OFF STATIC ELECTRICITY. DO NOT SMOKE, PERMIT OPEN FLAME, OR UNCOVER BATTERY COMPARTMENTS WHILE YOU ARE SERVICING THE DIESEL FUEL SYSTEM.

If empty, fill fuel tank.

Step 2. Check glass bowl on fuel filter assembly.

If contaminated, drain bowl into suitable container.

3. ENGINE CRANKS BUT FAILS TO START AT OUTSIDE TEMPERATURES BELOW 0°F (-17.8°C).

Step 1. Inspect connections to quick-start (ether) canister.

WARNING

ETHER QUICK START IS EXPLOSIVE AND POISONOUS. DO NOT PERMIT CANISTERS TO BE SUBJECTED TO EXCESSIVE HEAT. DO NOT ATTEMPT TO START VEHICLE IF ETHER LINES TO ENGINE ARE BROKEN OR DISCONNECTED.

Table 3-2. TROUBLESHOOTING (Cont)

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

---

3. ENGINE CRANKS BUT FAILS TO START AT OUTSIDE TEMPERATURES BELOW 0°F (-17.8°C). (Cont)

Step 1. (Cont)

Reconnect loose wires or tube.

Step 2. Check quick-start (ether) canister.

Replace quick-start canister.

4. ENGINE STARTS BUT MISFIRES OR DOES NOT RUN SMOOTHLY.

Step 1. Check position of hand throttle.

Reposition hand throttle to 800 to 1000 rpm until engine is warmed up.

Step 2. Inspect fuel filter assembly bowl for water or dirt.

Clean fuel filter assembly bowl by draining into proper container.

Step 3. Other causes.

Refer to Organizational Maintenance.

5. ENGINE OVERHEATS.

WARNING

TO PREVENT PERSONAL INJURY, TAKE EXTREME CARE WHEN REMOVING ENGINE COOLANT TANK FILL CAP IF TEMPERATURE GAGE READS ABOVE 195°F (90.6°C).

Step 1. Check coolant level.

Table 3-2. TROUBLESHOOTING (Cont)

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

---

5. ENGINE OVERHEATS. (Cont)

Step 1. (Cont)

CAUTION

TO PREVENT DAMAGE TO ENGINE, DO NOT ADD COOLANT TO COOLING SYSTEM WHEN ENGINE IS HOT UNLESS ENGINE IS RUNNING. ADD COOLANT SLOWLY.

Add coolant with engine running.

WARNING

WHEN WORKING IN ENGINE COMPARTMENT WITH THE ENGINE RUNNING, STAY CLEAR OF THE COOLING FAN. THE FAN MAY ENGAGE AUTOMATICALLY AT ANY TIME AND CAUSE SERIOUS INJURY.

Step 2. Check for loose or defective fan drive belt.

Have Organizational Maintenance tighten or replace belt.

Step 3. Check radiator shutters.

If closed, refer to Organizational Maintenance.

Step 4. Check radiator core.

If air passage is dirty or blocked, clear debris from passages.

Step 5. Check oil level.

Refer to Organizational Maintenance to replenish oil as required.

Step 6. Other causes.

Refer to Organizational Maintenance.

Table 3-2. TROUBLESHOOTING (Cont)

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

---

6. ENGINE RUNS ROUGH, LACKS POWER.

Step 1. Check fuel filter assembly bowl for water.

Clean fuel filter assembly bowl by draining into proper container.

Step 2. Check air filter restriction gage.

Have Organizational Maintenance service air filter if reading is over 25 in. (635 mm) of water.

Step 3. Other causes.

Refer to Organizational Maintenance.

7. LOW OIL PRESSURE.

Step 1. Check oil level.

Have Organizational Maintenance replenish oil as required.

Step 2. Other causes.

Refer to Organizational Maintenance.

8. EXCESSIVE OIL CONSUMPTION.

Step 1. Visually inspect for loose fittings on filters causing Class II or III leaks.

Tighten loose fittings on filters.

Step 2. Other causes.

Refer to Organizational Maintenance.

Table 3-2. TROUBLESHOOTING (Cont)

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

---

9. EXCESSIVE EXHAUST SMOKE.

WARNING

THE FOLLOWING PRECAUTIONS MUST BE OBSERVED TO ENSURE THE SAFETY OF PERSONNEL WHEN THE ENGINE OF ANY VEHICLE IS OPERATED:

DO NOT OPERATE ENGINE IN ENCLOSED AREAS UNLESS AREA IS ADEQUATELY VENTILATED.

DO NOT IDLE ENGINE FOR LONG PERIODS WITHOUT MAINTAINING ADEQUATE VENTILATION IN CAB.

DO NOT DRIVE VEHICLE WITH INSPECTION PLATES OR COVER PLATES REMOVED.

BE ALERT AT ALL TIMES DURING VEHICLE OPERATION FOR EXHAUST ODORS AND EXPOSURE SYMPTOMS. IF EITHER ARE PRESENT, IMMEDIATELY VENTILATE CAB AND ANY PERSONNEL COMPARTMENTS. IF SYMPTOMS PERSIST, REMOVE AFFECTED PERSONNEL FROM VEHICLE AND TREAT AS FOLLOWS: EXPOSE TO FRESH AIR, KEEP WARM, AND DO NOT PERMIT EXERCISE. IF NECESSARY, ADMINISTER ARTIFICIAL RESPIRATION. (SEE FM 21-11).

THE BEST DEFENSE AGAINST EXHAUST POISONING IS ADEQUATE VENTILATION.

Step 1. Check air filter restriction gage.

Have Organizational Maintenance service air filter if reading is over 25 in. (635 mm) of water.

Step 2. Other causes.

Refer to Organizational Maintenance.

Table 3-2. TROUBLESHOOTING (Cont)

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

---

10. WHILE USING THE ENGINE RETARDER, THE TRUCK BEGINS TO COAST OR FREE-WHEEL.

Step 1. Check to make sure the engine retarder system is engaged.

Take your foot completely off the accelerator pedal and reset the engine brake retarder switch, and reset engine brake selector switch to 3.

Step 2. Depress accelerator pedal to overcome free-wheeling.

If there is no improvement, turn engine brake retarder switch OFF, do not use engine retarder, and notify Organizational Maintenance.

TRANSMISSION, GEAR CASES

11. HARD OR UNABLE TO SHIFT BETWEEN LOW AND HIGH RANGE.

Step 1. Check lubricant level in gear cases.

Have Organizational Maintenance replenish or refill with proper lubricant.

Step 2. Other causes.

Refer to Organizational Maintenance.

12. TRANSMISSION WILL NOT SHIFT OR SHIFTS IRREGULARLY.

Step 1. Check level of transmission fluid.

Have Organizational Maintenance replenish fluid as required.

Step 2. Other causes.

Refer to Organizational Maintenance.

Table 3-2. TROUBLESHOOTING (Cont)

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

---

13. SLOW OR ERRATIC TRANSMISSION ENGAGEMENT.

Step 1. Check level of transmission fluid.

Have Organizational Maintenance replenish fluid as required.

Step 2. Other causes.

Refer to Organizational Mantenance.

14. TRANSMISSION FLUID TEMPERATURE GAGE INDICATES FLUID IS OVERHEATING DURING NORMAL OPERATION. NORMAL OPERATING TEMPERATURE RANGE IS 160°F-220°F (71.7°C-104.4°C).

Step 1. Check level of transmission fluid.

Have Organizational Maintenance replenish fluid as required.

Step 2. Check dipstick for evidence of foamy fluid.

Refer to Organizational Maintenance.

Step 3. Check dipstick for evidence of discoloration that could indicate water/antifreeze in fluid.

Refer to Organizational Maintenance.

15. FLUID LEADING FROM TRANSMISSION BREATHER.

Check for evidence of foamy fluid on transmission dipstick or high level of fluid.

Refer to Organizational Maintenance.

Table 3-2. TROUBLESHOOTING (Cont)

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

DRIVELINE LOCKING SYSTEM

16. DRIVELINE WILL NOT UNLOCK (INDICATOR LIGHT STAYS ON) WHEN DIFFERENTIAL LOCK/UNLOCK CONTROL IS MOVED TO THE UNLOCK POSITION.

Step 1. Make sure you have given system time to disengage.

Leave LOCK/UNLOCK control in UNLOCK position and wait for light to go off.

Step 2. If LOCK indicator light stays on after you have given system time to disengage, excessive driveline windup may have occurred.

Back up slowly, and check to see whether LOCK indicator light goes off. If indicator light remains on, notify Organizational Maintenance.

WHEELS, TIRES, AND HUBS

17. WHEEL WOBBLES.

Step 1. Check wheel for loose, broken, or missing lugs or nuts.

Tighten loose nuts; notify Organizational Maintenance to torque nuts properly. If any lug is broken or missing, notify Organizational Maintenance.

Step 2. Check to see if wheel is bent.

If wheel is bent, change wheel and tire assembly. Notify Organizational Maintenance that a replacement is needed.

Step 3. Other causes.

Refer to Organizational Maintenance.

Table 3-2. TROUBLESHOOTING (Cont)

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

---

18. TRUCK WANDERS OR PULLS TO ONE SIDE ON LEVEL PAVEMENT.

NOTE

Check tire pressure when tires are cold.

Step 1. Check tire pressure.

Adjust tire pressure to 55 psi (379 kPa).

Step 2. Check to make sure that all tires are of the proper size and type.

If tires are not properly matched, and if more than one tire is involved, notify Organizational Maintenance. If only one tire is improper and the spare tire is of the correct size and type, replace improper wheel and tire assembly with the spare and notify Organizational Maintenance that a replacement is needed and that the nuts must be torqued.

Step 3. Check for loose or damaged steering gear/linkage.

If you find evidence of any problems, notify Organizational Maintenance.

19. TIRES WORN UNEVENLY OR EXCESSIVELY.

NOTE

Check tire pressure when tires are cold.

Step 1. Check tire pressure.

Adjust tire pressure to 55 psi (379 kPa).

Table 3-2. TROUBLESHOOTING (Cont)

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

---

19. TIRES WORN UNEVENLY OR EXCESSIVELY. (Cont)

Step 2. Inspect for bent wheel rims.

If a rim is bent, replace that wheel and tire assembly. Notify Organizational Maintenance to torque nuts.

Step 3. Check for loose wheel; worn, loose, or damaged suspension components.

Tighten nuts on loose wheel; notify Organizational Maintenance to torque nuts. Notify Organizational Maintenance of any suspension damage.

20. TRUCK IS HARD TO STEER OR SHIMMIES.

Step 1. Check fluid level in power steering.

Have Organizational Maintenance replenish fluid as required.

NOTE

Check tire pressure when tires are cold.

Step 2. Check tire pressure.

Adjust tire pressure to 55 psi (379 kPa).

Step 3. Check for loose nuts.

Tighten nuts. Notify Organizational Maintenance to have nuts torqued.

Step 4. Check for worn, loose, or damaged parts of front axle or suspension.

If you find any problems, notify Organizational Maintenance.

Step 5. Other causes.

Refer to Organizational Maintenance.

Table 3-2. TROUBLESHOOTING (Cont)

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

AIR SYSTEM

21. AIR SYSTEM LOSES PRESSURE DURING TRUCK OPERATION (BUZZER SOUNDS).

Step 1. Note reservoir pressure gage to determine which system (A, white pointer, or B, red pointer) has low pressure. Check system reservoir draincock.

Close draincock.

Step 2. Fully depress and hold service brakes for two minutes. System air pressure should not drop more than five psi (0.4 kg/cm2).

If pressure drop exceeds five psi (0.4 kg/cm2), notify Organizational Maintenance.

Step 3. Check all system connectors and hoses for leaks.

If a leak is detected, notify Organizational Maintenance.

22. TRUCK BRAKES WILL NOT RELEASE (BUZZER DOES NOT SOUND).

Check for defective System Park Control Valve by setting and releasing valve.

If truck brakes will not release, notify Organizational Maintenance.

23. INDICATED AIR PRESSURE ABOVE 65 PSI (4.6 KG/CM2) BUT BUZZER SOUNDS.

Bleed air pressure from systems with engine off.

If air pressure shows drop, buzzer is defective. Notify Organizational Maintenance.

If air pressure indication is the same, buzzer is working. Build up air pressure by running engine until buzzer stops, then notify Organizational Maintenance.

Table 3-2. TROUBLESHOOTING (Cont)

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

ELECTRICAL SYSTEM

24. ONE OR MORE OF THE LIGHTING SYSTEMS NOT WORKING.

Step 1. Check to make sure appropriate switches are in the ON position. If truck is coupled to a trailer and problem is with the trailer lighting system, check to make sure that intervehicular cable is connected securely between truck and trailer.

Put appropriate switches in the ON position. If necessary, securely connect intervehicular cable.

Step 2. Other causes.

Refer to Organizational Maintenance.

CAB TILT SYSTEM

25. CAB WILL NOT MOVE FROM PARTIALLY TILTED POSITION.

Step 1. Check position of selector valve.

If valve is in raised position, move to lower position. If valve is in lower position, move to raise position.

Step 2. Check to be sure that there are no broken flex lines or leaks.

Operate pump until cylinder operates, then change valve to permit free-fall to full tilt or full lower.

Section III. MAINTENANCE PROCEDURES

3-5. LUBRICATION INSTRUCTIONS. For complete information on your responsibilities in lubricating the truck chassis, refer to the lubrication instructions in LO 9-2320-281-12. The lubrication order will show you the lubrication points and will tell you the proper intervals for lubricating each point.

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3-6. RAISE AND LOWER CAB.

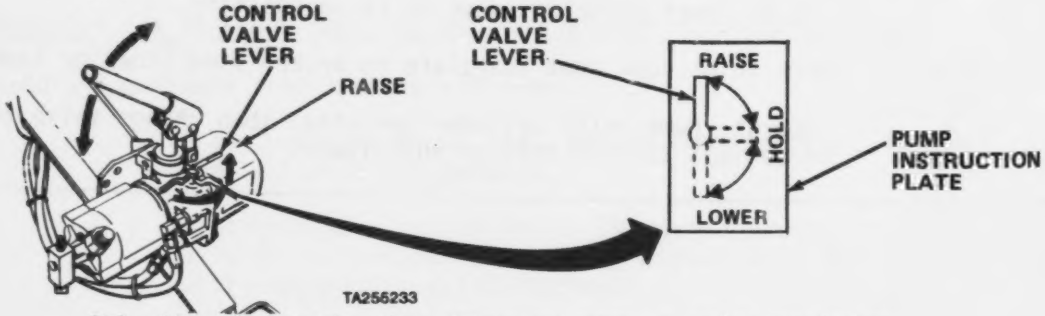
a. To inspect or service the engine compartment, the cab must be tilted forward using the following procedures.

(1) Secure or remove all loose objects in cab.

(2) Clear area ahead and above cab for 10 ft (3 m).

(3) Remove pump handle from bracket at left side of driver's seat.

(4) Close doors.



(5) Place control valve lever on pump to raise position (towards front of cab).

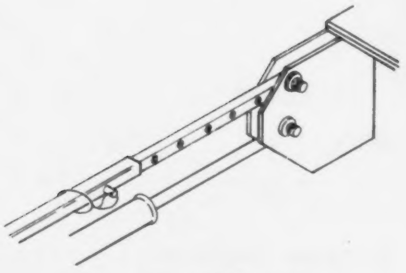
(6) Insert handle into pump socket, and pump handle up and down.

(7) Cab will unlatch and start to tilt as handle is pumped.

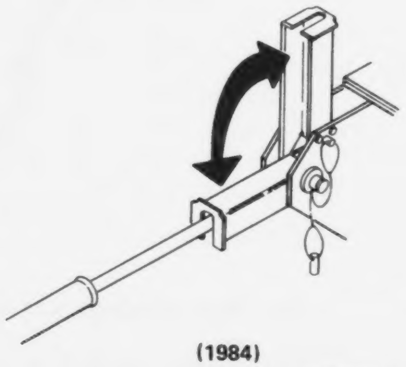
(8) Continue pumping until cab approaches balanced position, then pump slowly. When cab crosses balanced position and starts moving on its own, regulate rate of cab tilting with control valve lever until cab is in desired position.

WARNING

DO NOT RELY ON HYDRAULIC PRESSURE TO HOLD CAB IN A PARTIALLY TILTED POSITION. ALWAYS INSERT PIN IN SAFETY TUBE SLIDE WHENEVER CAB IS TILTED TO PREVENT SERIOUS PERSONAL INJURY.



(1980,1982)



(1984)

TA462289

(9) Remove safety lock pin from stowed position.

(10) Insert safety lock pin into safety slide tube. This holds cab in desired position (1980, 1982 models).

(11) Swing safety latch into lowered position (1984 model).

(12) Place control valve lever to hold position.

b. On completion of engine compartment checks and services, lower the cab using the following procedures:

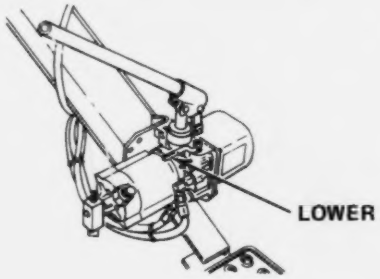
(1) Inspect engine compartment to be sure no tools or equipment are left on or around engine.

CAUTION

REMOVE SAFETY LOCK PIN BEFORE MOVING
LEVER TO PREVENT DAMAGE TO SAFETY
SLIDE AND CAB TILT MECHANISM.

(2) Remove safety lock pin from safety slide tube and stow pin (1980, 1982 models).

(3) Raise safety latch and pin in place with safety lock pin (1984 model).



TA255235

(4) Move control valve lever to lower position.

(5) Insert handle in pump socket and begin to pump.

(6) As cab lowers, it will pass a balanced position and start to lower by gravity. When this position is passed, stop pumping. The cab will free-fall smoothly onto the rear mounts and the cab latch hooks will engage. Leave the selector valve in the lower position.

NOTE

The selector valve should always be in the lower position when the cab tilt system is not being used.

(7) Remove pump handle and store in cab.

3-7. CLEAN TRUCK.

a. Clean Exterior.

(1) Never wipe off dirt when truck is dry. Never wash truck in direct sunlight or if the truck exterior is hot to touch.

d. Check screen and remove any debris.

e. Fill tank.

f. Reinstall fill cap.

3-9. CHANGING WHEEL AND TIRE ASSEMBLY.

a. General.

(1) A spare wheel and tire assembly is provided for the front. This spare is the same size as the two front wheels, but is smaller than those used on the rear.

(2) In case of a flat tire, stop the truck where it will not be a hazard to traffic, or to personnel who are changing the tire.

(3) In the event the van is not attached to the truck, notify your supervisor immediately.

b. Remove spare tire and wheel.

(1) Turn on emergency flashing lights.

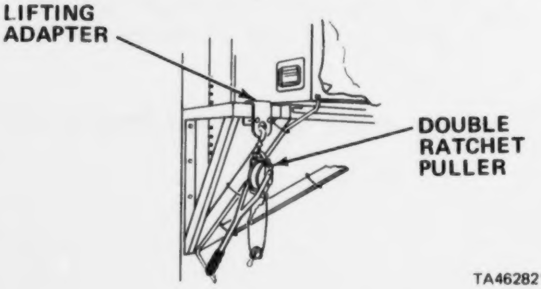
(2) Set out reflectors and/or flares as required by area directives and tactical situation.

WARNING

AIR BAGS MUST BE FULLY DEFLATED, AND WHEELS MUST BE CHOCKED TO PREVENT MOVEMENT OF TRUCK WHILE JACKED. SERIOUS INJURY TO PERSONNEL AND/OR DAMAGE TO EQUIPMENT COULD RESULT.

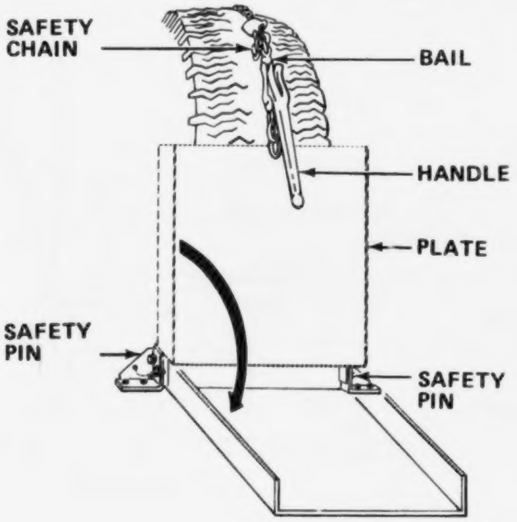
(3) Deflate air suspension system. Place chocks at wheels at opposite rear corner of truck from tire to be changed, to prevent vehicle from rolling in either direction.

(4) Remove double ratchet puller and breaker bar from inside van.



(5) Attach fixed end of puller to lifting adapter on air conditioner bracket.

(6) Pay out other end of puller to spare tire and wheel. Pass end through center of wheel, around tire, and hook to cable.



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WARNING

ENSURE THAT ALL FOUR SAFETY PINS ARE ENGAGED TO PREVENT TIRE FROM ROLLING OUT. SERIOUS INJURY OR EQUIPMENT DAMAGE MAY OCCUR.

(7) Release safety chain by raising handle. This will disengage the bail. Allow chain to fall free.

(8) Using ratchet, take up slack in cable.

WARNING

APPROXIMATE WEIGHT OF WHEEL AND TIRE ASSEMBLY IS 200 POUNDS (91 KG). TO PROVIDE BETTER CONTROL AND PREVENT PERSONAL INJURY OR DAMAGE, REMOVE THE ASSEMBLY FROM HIGH SIDE OF TRUCK.

(9) Pull safety pins from plates and brackets on both sides of spare tire retainer. Lower plates.

WARNING

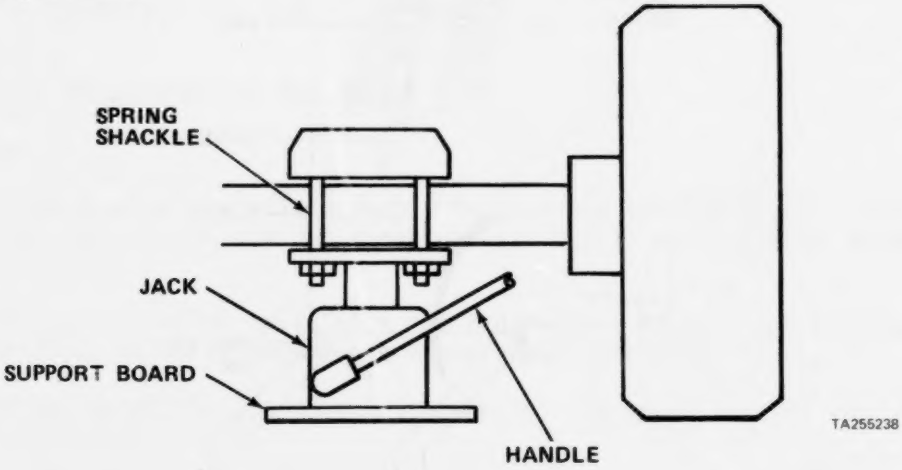
THE WHEEL AND TIRE ASSEMBLY IS NOW FREE FROM RETAINER. TO PREVENT INJURY OR DAMAGE, AVOID UNNECESSARY MOVEMENT THAT MAY CAUSE THE ASSEMBLY TO ROLL OR FALL.

(10) Using ratchet, lift tire and wheel from retainer.

(11) Lower tire to ground and remove cable.

c. Replace defective tire.

(1) Remove jack, jack support board, lug wrench, and handle from tool compartment.



(2) Place jack and support board under axle at spring shackle.

(3) Loosen wheel nuts with lug wrench and breaker bar.

NOTE

The wheel nuts are stamped R for right side and L for left side of truck. Nuts on R lugs are turned to right to tighten and left to loosen. Nuts on L lugs are turned to left to tighten and right to loosen.

(4) Using slotted jack handle, rotate release valve on jack firmly to right.

WARNING

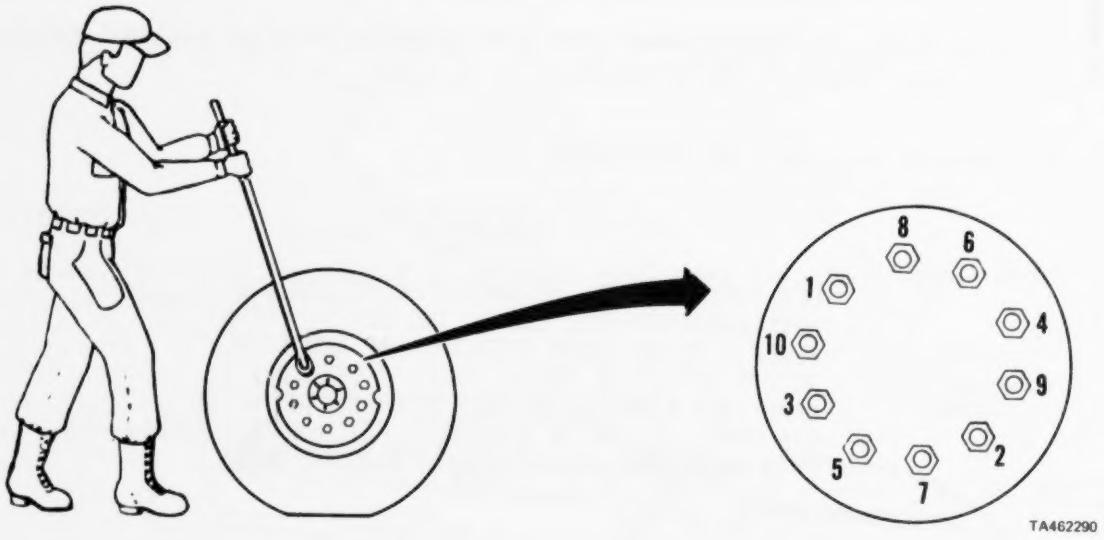
FAILURE TO OBSERVE THIS WARNING CAN RESULT IN SERIOUS INJURY. THE HYDRAULIC JACK IS INTENDED ONLY FOR LIFTING TRUCK, NOT FOR SUPPORTING VEHICLE FOR PERFORMING MAINTENANCE. DO NOT GET UNDER TRUCK AFTER IT IS RAISED UNLESS IT IS PROPERLY SUPPORTED WITH BLOCKS OR JACK STANDS.

(5) Insert handle in jack socket and pump handle until tire is free of ground.

(6) Remove nuts. Remove wheel and tire assembly.

(7) Place spare on axle then spin on nuts firmly to secure assembly.

(8) Lower jack by rotating release valve slowly to the left.



(9) Tighten nuts alternately as shown. Have organizational maintenance torque nuts to 300 ft lbs (407 N•m) at first opportunity.

d. Mount damaged wheel and tire assembly.

(1) Position defective tire and wheel parallel to truck chassis.

(2) Pass end of puller cable through center of wheel, around tire, and hook to cable.

(3) Using ratchet, raise tire and wheel assembly to retainer.

(4) Slack puller cable sufficiently to allow positioning of tire into retainer assembly.

WARNING

DO NOT REMOVE CABLE AT THIS TIME. TIRE AND WHEEL ASSEMBLY IS FREE TO ROLL OR FALL, CAUSING POSSIBLE INJURY OR EQUIPMENT DAMAGE.

(5) Raise retainer plates and secure with safety pins.

(6) Engage safety chain. Ensure that handle is pushed firmly down.

(7) Remove puller cable from tire.

(8) Remove slack from cable; remove and stow puller and breaker bar in van.

(9) Store jack and all tools in tool compartment. Store all emergency signals and markers.

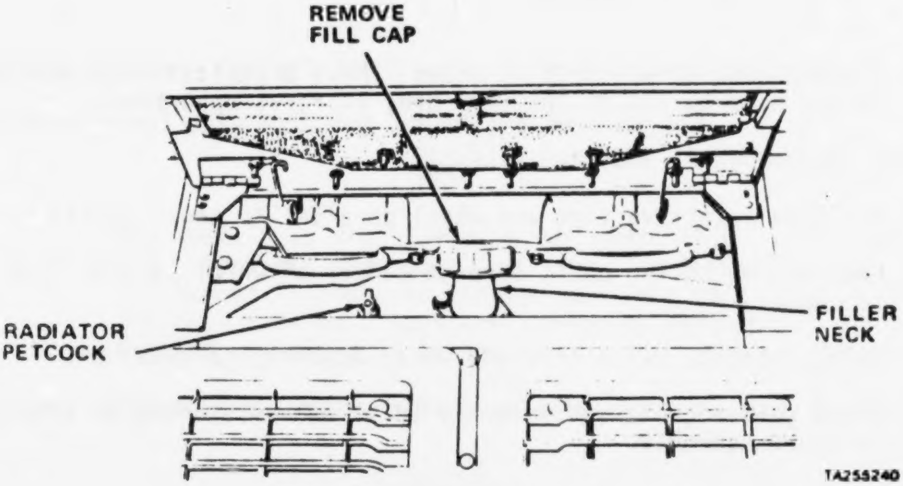
(10) Turn off emergency flashing lights.

(11) Transport damaged wheel and tire assembly to organizational maintenance for repair or replacement.

3-10. ADDING COOLANT TO RADIATOR.

WARNING

LET RADIATOR COOL BEFORE REMOVING CAP. REMOVE RADIATOR FILL CAP IN TWO STEPS. FIRST, PLACE A THICK CLOTH OVER THE CAP AND SLOWLY ROTATE CAP LEFT; PAUSE, AND LET PRESSURE ESCAPE FROM COOLING SYSTEM. CONTINUE ROTATING CAP UNTIL IT CAN BE REMOVED. FAILURE TO FOLLOW THIS PROCEDURE CAN RESULT IN SERIOUS BURNS.



a. Remove fill cap; use care to prevent personal injury.

b. Open radiator petcock next to filler neck.

CAUTION

DO NOT ADD COOLANT TO COOLING SYSTEM WHEN ENGINE IS HOT UNLESS ENGINE IS RUNNING. ADD COOLANT SLOWLY TO PREVENT ENGINE DAMAGE.

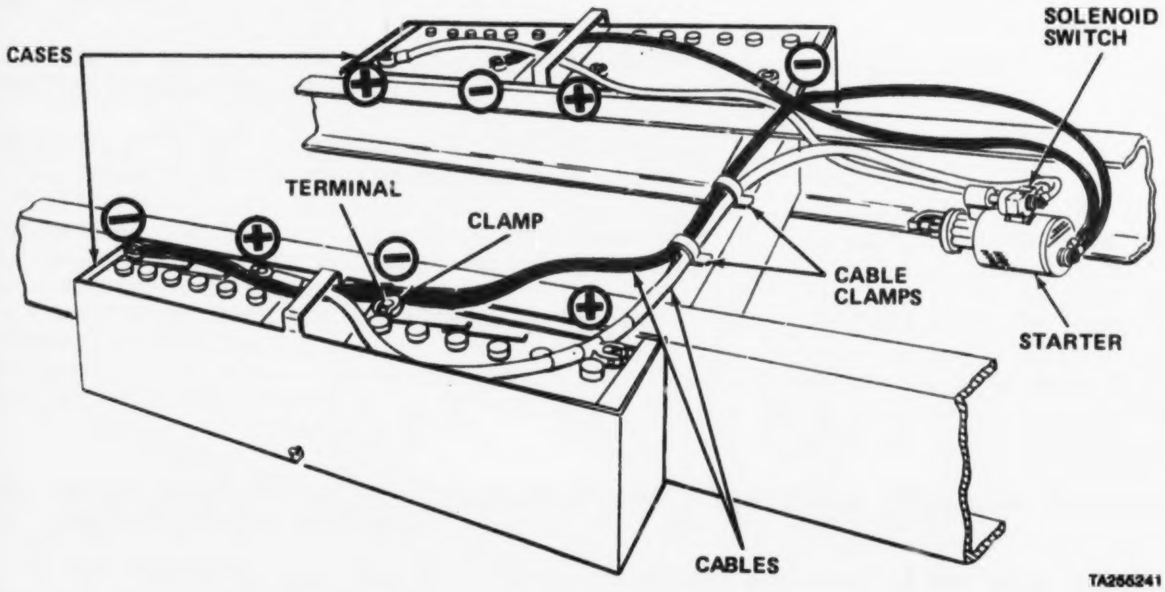
c. Add coolant to radiator until coolant flows out of petcock Be sure to run engine if engine is hot.

d. Close petcock.

e. Reinstall fill cap.

3-11. BATTERIES.

Four 12-volt batteries connected in parallel supply the 12-volt system. Check the batteries as described below.


CASES
SOLENOID SWITCH
TERMINAL
CLAMP
CABLE CLAMPS
STARTER
CABLES
TA255241

CAUTION

ALWAYS CHECK TO MAKE SURE THAT THE BATTERIES ARE CONNECTED AS SHOWN IN THE ILLUSTRATION (PARALLEL). FAILURE TO CONNECT BATTERIES CORRECTLY CAN RESULT IN SEVERE DAMAGE TO THE TRUCK'S ELECTRICAL SYSTEM.

- CABLES, CONNECTIONS

Check all cables. Make sure they are in good condition. Check connections at terminals. Make sure they are secure. Inspect cable clamps, terminals, and battery tops for cleanliness and corrosion. If defects are found, notify Organizational Maintenance.

- CASES

  Check battery cases. Make sure none is leaking. If you find leakage, notify Organizational Maintenance.

- LATCHES

  Unfasten to remove battery box cover. Fasten to secure cover to box.

APPENDIX A

REFERENCES

A-1. PUBLICATION INDEX

The following index should be consulted frequently for latest changes or revisions and for new publications relating to material covered in this technical manual.

Consolidated Index of Army Publications and Blank Forms	DA Pam 310-1

A-2. FORMS

Refer to TM 38-750, The Army Maintenance Management Systems (TAMMS), for instructions on the use of maintenance forms pertaining to this material.

Identification and Distribution of DA Publications and Issue of Agency and Command Administrative Publications	AR 310-2
Recommended Changes to Publications and Blank Forms	DA Form 2028
Recommended Changes to Equipment Technical Manuals	DA Form 2028-2
Hand Receipt/Annex Number	DA Form 2062
Equipment Inspection and Maintenance Worksheet	DA Form 2404
Maintenance Request	DA Form 2407
Equipment Daily Log	DA Form 2408-1
Quality Deficiency Report	SF 368

A-3. ARMY REGULATIONS, FIELD MANUALS, SUPPLY BULLETINS, TECHNICAL BULLETINS, AND TECHNICAL MANUALS

The following publications contain information pertinent to the major item of material and associated equipment.

a. Operating Vehicle.

Army Motor Transport Units and Operations	FM 55-30
Manual for the Wheeled Vehicle Driver	FM 21-305

b. Maintenance and Repair.

Hand Receipt Covering Contents of Components of End Item (COEI), Basic Issue Items (BII), and Additional Authorization List (AAL) for Truck Chassis: Direct Support Section, Topographic Support System (TSS)	TM 9-2320-281-10-HR
Organizational Maintenance Manual for Truck Chassis: Direct Support Section, Topographic Support System (TSS)	TM 9-2320-281-20
Lubrication Order: Truck Chassis: Direct Support Section, Topographic Support System (TSS)	LO 9-2320-281-12

Organizational Care, Maintenance and Repair of Pneumatic Tires, Inner Tubes and Radial Tires	TM 9-2610-200-20
Description, Use, Bonding Techniques, and Properties of Adhesives	TB ORD 1032
Materials Used for Cleaning, Preserving, Abrading and Cementing Ordnance Materiel and Related Materiels Including Chemicals	TM 9-247
Metal Body Repair and Related Operations	FM 43-2
Welding Theory and Application	TM 9-237
Painting Instructions for Field Use	TM 43-0139
Inspection, Care, and Maintenance of Antifriction Bearings	TM 9-214
Cooling Systems: Tactical Vehicles	TM 750-254

c. Cold Weather Operation and Maintenance.

Basic Cold Weather Manual	FM 31-70
Northern Operations	FM 31-71
Operation and Maintenance of Ordnance Materiel in Extreme Cold Weather (0°F to -65°F)	TM 9-207

d. Decontamination.

Chemical, Biological, and Radiological (CBR) Decontamination	TM 3-220
(HFT) How to Fight - Nuclear, Biological, and Chemical Reconnaissance and Decontamination Operations	FM 3-87
NBC (Nuclear, Biological and Chemical) Defense. (Reprinted w/Basic Incl. C1)	FM 21-40

e. General.

Camouflage	FM 5-20
Procedures for Destruction of Equipment to Prevent Enemy Use (Mobility Equipment Command)	TM 750-244-3
Procedures for Destruction of Tank-Automotive Equipment to Prevent Enemy Use	TM 750-244-6
Administrative Storage of Equipment	TM 740-90-1
Use and Care of Hand Tools and Measuring Tools	TM 9-243
Principles of Automotive Vehicles	TM 9-8000
Equipment Improvement Report and Maintenance Digest	TB 43-0001-39

APPENDIX B

COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LISTS

Section I. INTRODUCTION

B-1. SCOPE. This appendix lists components of end item and basic issue items for the Truck Chassis for Direct Support Section to help you inventory items required for safe and efficient operation.

B-2. GENERAL. The Components of End Item and Basic Issue Items Lists are divided into the following sections:

a. SECTION II: COMPONENTS OF END ITEM. This listing is for informational purposes only and is not authority to requisition replacements. These items are part of the end item, but are removed and separately packaged for transportation or shipment. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Illustrations are furnished to assist you in identifying the items.

b. SECTION III: BASIC ISSUE ITEMS (BII). These are the minimum essential items required to place the Truck Chassis for Direct Support Section in operation, to operate it, and to perform emergency repairs. Although shipped separately packaged, BII must be with the Truck Chassis for Direct Support Section during operation and whenever it is transferred between property accounts. The illustrations will assist you with hard-to-identify items. This manual is your authority to request/requisition replacement BII based on TOE/MTOE authorization of the end item.

B-3. EXPLANATION OF COLUMNS. The following provides an explanation of columns found in the tabular listings:

a. COLUMN (1): ILLUSTRATION NUMBER (ILLUS NUMBER). This column indicates the number of the illustration in which the item is shown.

b. COLUMN (2): NATIONAL STOCK NUMBER. Indicates the National Stock Number (NSN) assigned to the item and will be used for requisitioning purposes.

c. COLUMN (3): DESCRIPTION. Indicates the Federal item name and, if required, a minimum description to identify and locate the item. The last line for each item indicates the Federal Supply Code for Manufacture (FSCM) in parentheses followed by the part number.

d. COLUMN (4): UNIT OF MEASURE (U/M). Indicates the measure used in performing the actual operational/maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in., pr).

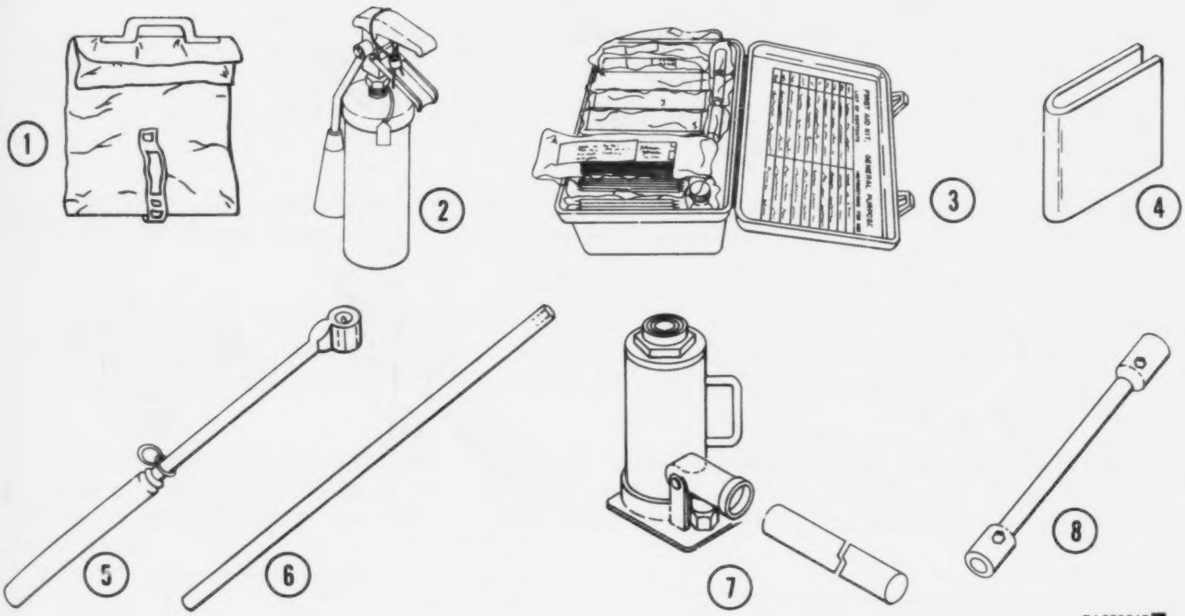
e. COLUMN (5): QUANTITY REQUIRED (QTY RQR). Indicates the quantity of the item authorized to be used with/on the equipment.

Section II. COMPONENTS OF END ITEM

Not Applicable

(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM AND PART NUMBER	(4) U/M	(5) QTY RQR
		Not Applicable		

Section III. BASIC ISSUE ITEMS



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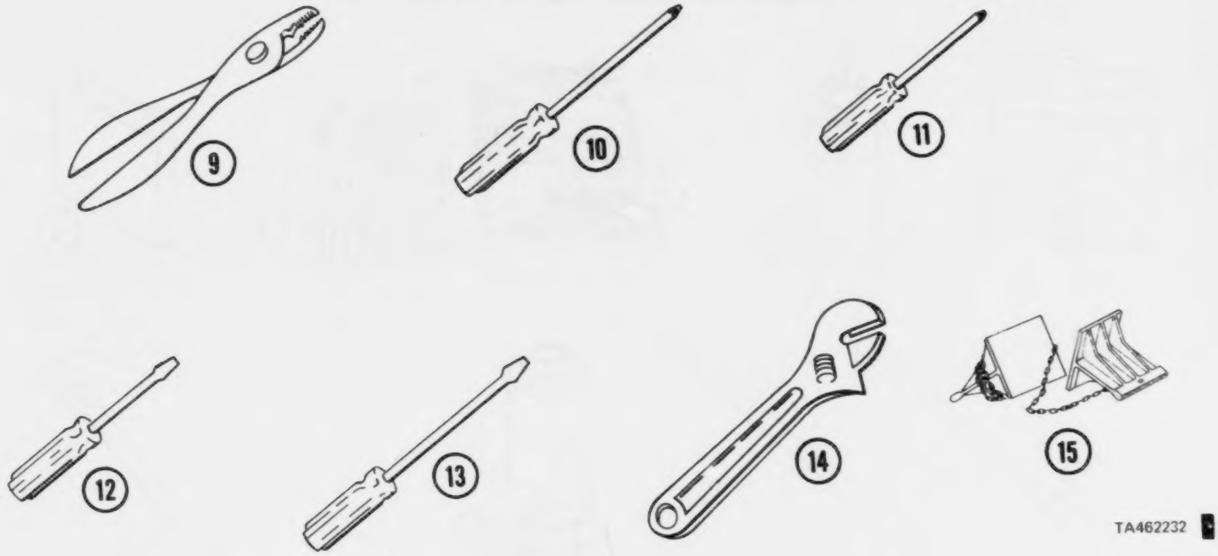
(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM AND PART NUMBER	(4) U/M	(5) QTY RQR
1	5120-00-722-4142	Bag, Cotton Duck, 10x20x/Flap (24617) 3327036	ea	1
2	4910-00-270-4512	Extinguisher, Fire (99539) CP5J	ea	1
3	6546-00-922-1200	First Aid Kit, General Purpose (19207) 11677011	ea	1
4	7530-01-065-0166	Folder, Equipment Record (72094) 43986-1	ea	1
5	4710-00-204-2644	Gage, Tire Pressure (19207) 7974576-1	ea	1
6	5120-01-084-3298	Handle, Wrench (34623) 967556	ea	1
7		Jack, Hydraulic, 12-Ton 18-305	ea	1
8	5120-00-316-9217	Lug Wrench (19207) 41-W-3838-40	ea	1

Section III. BASIC ISSUE ITEMS (Cont)



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(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM AND PART NUMBER	(4) U/M	(5) QTY RQR
9	5120-00-223-7397	Pliers, Slip Joint, Straight Nose, 8" Long (19207) 5214421	ea	1
10	5120-00-224-7375	Screwdriver, Cross-Tip, Phillips, Plastic Handle, 8" Long (81348) 666S 121	ea	1
11	5120-00-234-8913	Screwdriver, Cross-Tip, Tip Sy Noz Blade, 4" (96906) MS1522-5	ea	1
12	5120-00-222-8852	Screwdriver, Flat-Tip, Flared Tip Blade, 4" (77948) 225498	ea	1
13	5120-00-278-1280	Screwdriver, Flat-Tip, Plastic Handle, Round Blade, 3/8" Wide Tip, 8" Long (55719) SSD8	ea	1
14	5120-00-240-5328	Wrench, Open End, Adj. Type, 8" Long (96906) MS15461-3	ea	1
15	NNIIN	Chocks, Wheel (Set of 2) (97403) 13225E4710	ea	2

APPENDIX C

ADDITIONAL AUTHORIZATION LIST

Section I. INTRODUCTION

C-1. SCOPE. This appendix lists additional items you are authorized for the support of the Truck Chassis for Direct Support Section.

C-2. GENERAL. This list identifies items that do not have to accompany the Truck Chassis for Direct Support Section and that do not have to be turned in with it. These items are all authorized to you by CTA, MTOE, TDA or JTA.

C-3. EXPLANATION OF LISTING. National Stock Numbers (NSN), descriptions and quantities are provided to help you identify and request the additional items you require to support this equipment. The items are listed in alphabetical sequence by item name.

Section II. ADDITIONAL AUTHORIZATION LIST

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION FSCM AND PART NUMBER	(3) U/M	(4) QTY AUTH
5510-00-491-0306	Block, Wood, 7" x 8" x 9", Hydraulic Jack Support (19207) CPR-103023-1	ea	1

APPENDIX D

EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

D-1. SCOPE. This listing is for informational purposes only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-970, Expendable/Durable I items (except Medical, Class V, Repair Parts, and Heraldic Items), or CTA 8-100, Army Medical Department Expendable/Durable Items.

D-2. EXPLANATION OF COLUMNS

a. COLUMN (1): ITEM NUMBER. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., "Use cleaning solvent, Item 17, Appendix D.").

b. COLUMN (2): LEVEL. This column identifies the lowest level of maintenance that requires the listed item.

C	Operator/Crew
O	Organizational Maintenance
F	Direct Support Maintenance
H	General Support Maintenance

c. COLUMN (3): NATIONAL STOCK NUMBER. This is the National Stock Number assigned to the item. Use it to request or requisition the item.

d. COLUMN (4): DESCRIPTION. Indicates the Federal item name and, if required, a description to identify the item. The last line for each item indicates the Federal Supply Code for Manufacturer (FSCM) in parentheses followed by the part number.

e. COLUMN (5): UNIT OF MEASURE (U/M). Indicates the measure used in performing the actual maintenance function. This measure is expressed by two-character alphabetical abbreviations (e.g., ea, in., pr). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
1	0	6850-00-243-1992	Antifreeze, Permanent, Glycol, Inhibited (MIL-A-46153)	gl
2	0	9150-00-223-4134	Fluid, Hydraulic (MIL-H-5606E)	gl
3			Fluid, Hydraulic, Non-Petroleum Base, Automotive (Arctic Type) (MIL-H-13910) U/I	
	0	9150-00-252-6375	1 gal. can	gl
4			Fluid, Hydraulic, Non-Petroleum Base, Automotive (Arctic type) (MIL-H-13910) U/I	
	0	9150-00-190-0932	1 pt can	pt
	0	9150-00-231-9071	1 gal. can	gl
5	0	9150-00-935-9807	Fluid, Hydraulic, Petroleum Base, Preservative (MIL-H-6083)	gl
6			Grease, Automotive and Artillery GAA (MIL-G-10924)	
	0	9150-00-065-0029	2-1/4 oz tube	oz
	0	9150-00-935-1017	14 oz cartridge	oz
	0	9150-00-190-0904	1 lb can	lb
	0	9150-00-190-0905	5 lb can	lb
	0	9150-00-190-0907	35 lb can	lb
7			Grease, General Purpose (MIL-G-23549)	
	0	9150-00-985-7316	1 lb can	lb
8	0	9150-00-905-9100	Lubricating Oil, Gear (MIL-L-2105)	gl

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST (Cont)

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
9			Oil, Fuel, Diesel DF-1, Winter (VV-F-800)	
	0	9140-00-286-5286	Bulk	gl
	0	9140-00-286-5287	5 gal. can	gl
	0	9140-00-286-5288	55 gal. drum, 16 gage	gl
	0	9140-00-286-5289	55 gal. drum, 18 gage	gl
10			Oil, Fuel, Diesel DF-2, Regular (VV-F-800)	
	0	9140-00-286-5294	Bulk	gl
	0	9140-00-286-5295	5 gal. can	gl
	0	9140-00-286-5296	55 gal. drum, 16 gage	gl
	0	9140-00-286-5297	55 gal. drum, 18 gage	gl
11			Oil, Lubricating, Exposed Gear, CW (VV-L-751)	
	0	9150-00-234-5197	5 lb can	lb
	0	9150-00-261-7891	35 lb pail	lb
12			Oil, Lubricating, Gear, Sub-zero, GOS (MIL-L-10324)	
	0	9150-00-261-7904	1 qt can	qt
	0	9150-00-257-5440	5 gal. drum	gl
	0	9150-00-257-5443	55 gal. drum	gl

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST (Cont)

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
13			Oil, Lubricating, IE/HDO 50 (MIL-L-2104C)	
	0	9150-00-188-9864	1 qt can	qt
	0	9150-00-188-9865	5 gal. drum	gl
	0	9150-00-188-9866	55 gal. drum, 16 gage	gl
14			Oil, Lubricating, OE/HDO 10 (MIL-L-2140)	
	0	9150-00-265-9425	1 qt can	qt
	0	9150-00-265-9428	5 gal. drum	gl
	0	9150-00-265-9429	55 gal. drum, 16 gage	gl
	0	9150-00-265-9430	55 gal. drum, 18 gage	gl
15			Oil, Lubricating, OE/HDO 30 (MIL-L-2104C)	
	0	9150-00-265-9433	1 qt can	qt
	0	9150-00-265-9435	5 gal. drum	gl
	0	9150-00-265-9436	55 gal. drum, 16 gage	gl
	0	9150-00-265-9437	55 gal. drum, 18 gage	gl
16			Oil, Lubricating, OEA ICE, Sub-zero (MIL-L-46167)V/I	
	0	9150-00-402-4478	1 qt can	qt
	0	9150-00-402-2372	5 gal. drum	gl
	0	9150-00-491-7197	55 gal. drum, 16 gage	gl

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST (Cont)

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
17			Solvent, Dry Cleaning, SD (P-D-680)	
	0	6850-00-664-5685	1 qt can	qt
	0	6850-00-281-1985	1 gal. can	gl
	0	6850-00-285-8011	55 gal. drum	gl

ALPHABETICAL INDEX

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3-18 3-19 & 3-20	3-6	X	

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

The note on page 3-20 states "The selector valve should always be in the lower position when the cab tilt system is not being used." However, illustration on page 3-18 shows the "HOLD" position as the starting position.

Illustration should be changed to show selector valve lever in lower position.

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THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE

1 Centimeter = 10 Millimeters = 0.01 Meter = 0.3937 Inch
1 Meter - 100 Centimeters = 1000 Millimeters = 39.37 Inches
1 Kilometer = 1000 Meters = 0.621 Mile

WEIGHTS

1 Gram = 0.001 Kilogram = 1000 Milligrams = 0.035 Ounce
1 Kilogram = 1000 Grams = 2.2 Lb.
1 Metric Ton = 1000 Kilograms = 1 Magagram = 1.1 Short Tons

LIQUID MEASURE

1 Milliliter = 0.001 Liter = 0.0338 Fluid Ounce
1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

SQUARE MEASURE

1 Sq. Centimeter = 100 Sq. Millimeters = 0.155 Sq. Inch
1 Sq. Meter = 10,000 Sq. Centimeters = 10.76 Sq. Feet
1 Sq. Kilometer = 1,000,000 Sq. Meters = 0.386 Sq. Mile

CUBIC MEASURE

1 Cu. Centimeter = 1000 Cu. Millimeters = 0.06 Cu. Inch
1 Cu. Meter = 1,000,000 Cu. Centimeters = 35.31 Cu. Feet

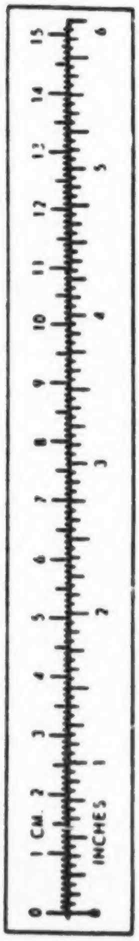
TEMPERATURE

5/9 (°F - 32) = °C
212° Fahrenheit is equivalent to 100° Celsius
90° Fahrenheit is equivalent to 32.2° Celsius
32° Fahrenheit is equivalent to 0° Celcius
9/5 (°C + 32) = °F

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
Pints	Liters	0.473
Quarts	Liters	0.946
Gallons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
Liters	Gallons	0.264
Grams	Ounces	0.035
Kilograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pound-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
Kilometers per Liter	Miles per Gallon	2.354
Kilometers per Hour	Miles per Hour	0.621



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